muratec™

MFX-2500

FIELD ENGINEERING MANUAL

North American version 1.0

(Febrary. 29 2000)

MURATA MACHINERY, LTD
COMMUNICATION EQUIPMENT DIV.

Safety Information

Laser Safety

This is a digital machine which prints by means of a laser. There is no possibility of danger from the laser, provided the machine is operated according to the instructions in this manual.

Since radiation emitted by the laser is completely confined within protective housing, the laser beam cannot escape from the machine during any phase of user operation.

This machine is certified as a Class 1 product. This means the machine does not produce hazardous laser radiation.

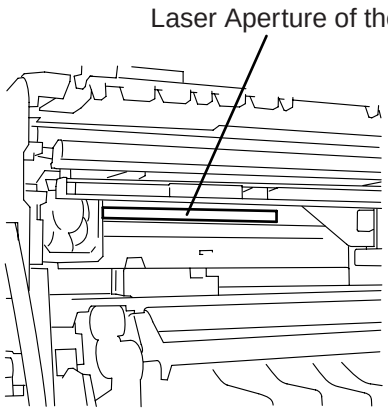
CAUTION: The use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure. Because of this, Minolta strongly recommends that you operate your copy machine only as described in this documentation.

Internal Laser Radiation

Maximum Average Radiation Power: 36.7µW at laser aperture of the print head unit

Wavelength: 770-810nm

This product employs a Class IIIb Laser Diode that emits an invisible laser beam.
The Laser Diode and Scanning Polygon Mirror are incorporated in the print head unit.
The print head unit is NOT A FIELD SERVICE ITEM.
Therefore, the print head unit should not be opened under any circumstances.



This figure shows the view inside the Right Side Door with the Imaging Unit removed.

For United States

CDRH regulation
This copier is certified as a Class 1 Laser product under the Radiation Performance Standard according to the Food, Drug and Cosmetic Act of 1990. Compliance is mandatory for Laser products marketed in the United States and is reported to the Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration of the U.S.
Department of Health and Human Services (DHHS). This means that the device does not produce hazardous laser radiation.

The label shown on next page indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

CAUTION: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 5mW and the wavelength is 770-810nm.

For Europe

CAUTION: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 5mW and the wavelength is 770-810nm.

For Denmark

ADVARSEL
Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion.

Undgå udsættelse for stråling.

Klasse 1 laser produkt der opfylder IEC60825 sikkerheds kravene.

For Finland

LUOKAN 1 LASERLAITE

VAROITUS
Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARO
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättomälle lasersäteilylle.
Älä katso säteeseen.

For Sweden

KLASS 1 LASER APPARAT

VARNING
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

VARNING
Osynlig laserstråining när denna del är öppnad och spärren är urkopplad. Betrakta ej stråien.

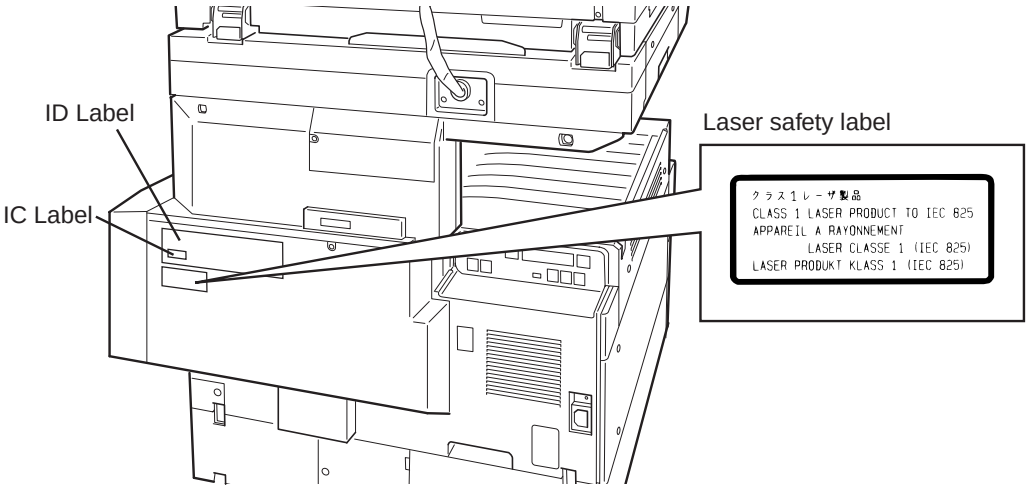
For Norway

ADVERSEL
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes för unsynlig laserstrålning, som overskrider grensen for laser klass 1.

Dette en halveder laser. Maksimal effekt till laserdiode er 5mW og bϕlgelengde er 770-810nm.

Laser Safety Label

A laser safety label is attached to the outside of the machine as shown below.



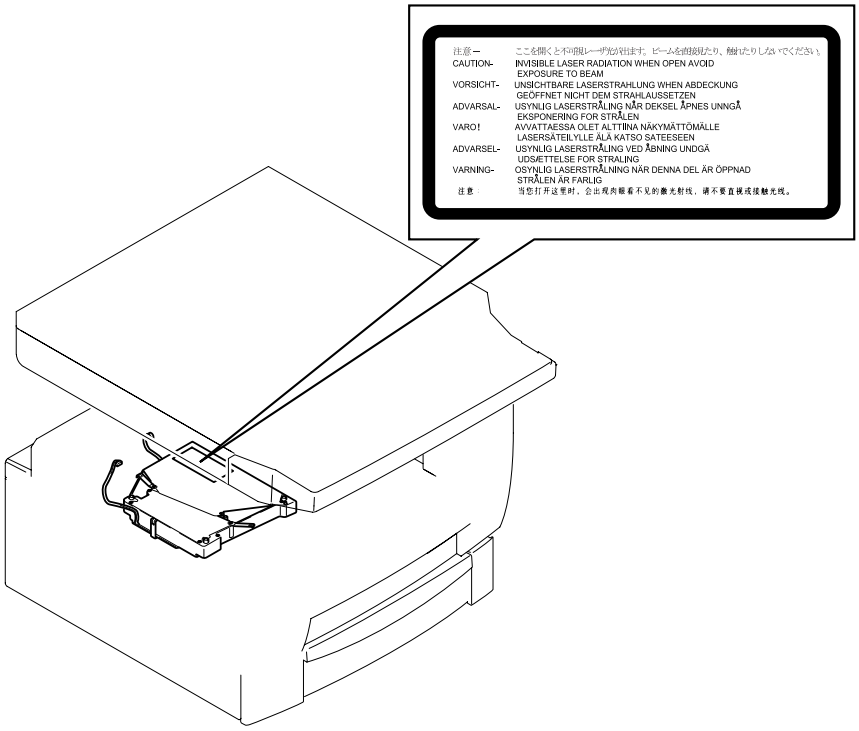
Label inside copy machine

The following laser safety label will be attached inside the copy machine as shown below.

Please read the following for your own protection.

⚠Caution

Opening the cover indicated by the Caution label may expose you to harmful laser radiation which could cause damage or loss of eyesight. Do not open the cover when the power is on.


注意－ ここを開くと不可視レーザ光が出ます．ビームを直接見たり，触れたりしないでください．
CAUTION- INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
VORSICHT- UNSICHTBARE LASERSTRAHLUNG WHEN ABDECKUNG GEÖFFNET NICHT DEM STRAHLAUSSETZEN
ADVARSAL- USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARO! AVVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ KATSO SATEESEEN
ADVARSEL- USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRALING
VARNING- OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD STRÅLEN ÄR FARLIG
注意 当您打开这里时，会出现肉眼看不见的激光射线，请不要直视或接触光线。

ALL Areas

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries accordingto the manufacturer’s instructions.

Muratec does not recommend the independent replacement of this battery.
The battery is sold only as a component part of the main control PCB and cannot be purchased separately from Muratec.

Il y a un danger d'explosion s'il y a un remplacement incorrect de la batterie.
Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur.
Mettre au rebut les batteries usagées conformement aux instructions du fabricant.

Germany only

VORSICHT!

Explosinsgefahr bei unsachgemäßen austausch der batterie.
Ersatz nur durch denselben oder einen vom hersteller empfohlenen ähnlichen typ. Entsorgung gebrauchter batterien nach angaben des herstellers.

Denmark only

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

Norway only

ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

Sweden only

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

Finland only

VAROITUS

Paristo voi räjähtää, los se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä Käytetty paristo valmistajan ohjeiden mukaisesti.

ALL Areas

CAUTION

“Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used IC Package according to the manufacturer’s instructions.”

Germany only

VORSICHT!

⇒”Austausch nur durch denselben oder einen vom Hersteller empfohlenen, gleichwertigen typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

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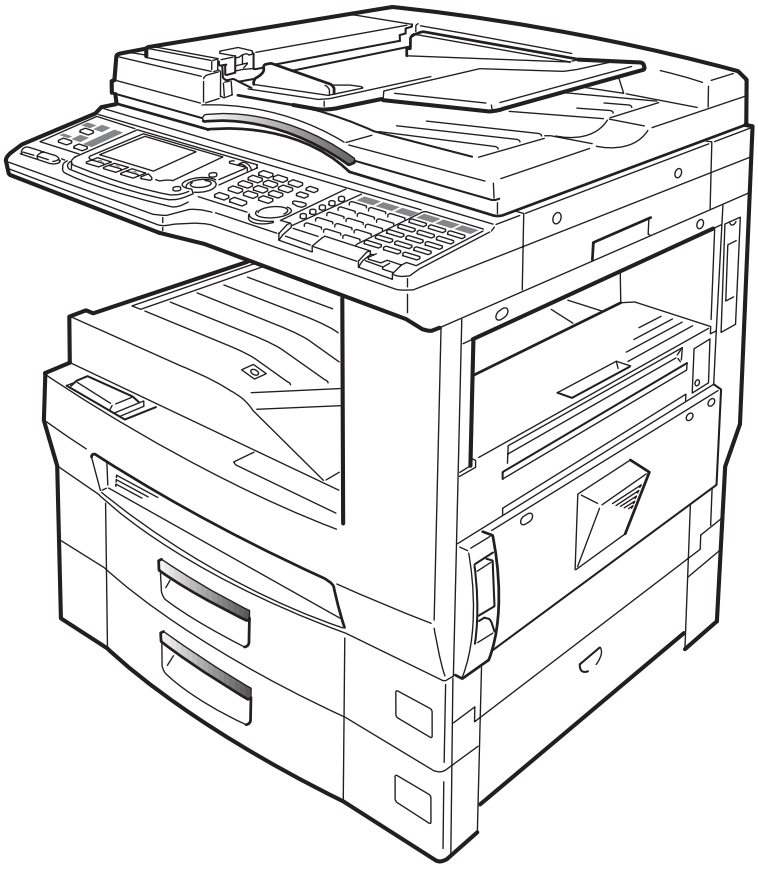
Section 1
General Description

1.1 Product Description

The MFX-2500 is Multi-function product with flat bed scanner and Group 3 and V.34 HDX modem facsimile machine. Documents are printed on plain paper using dry electrophotographic printing.



3d right1

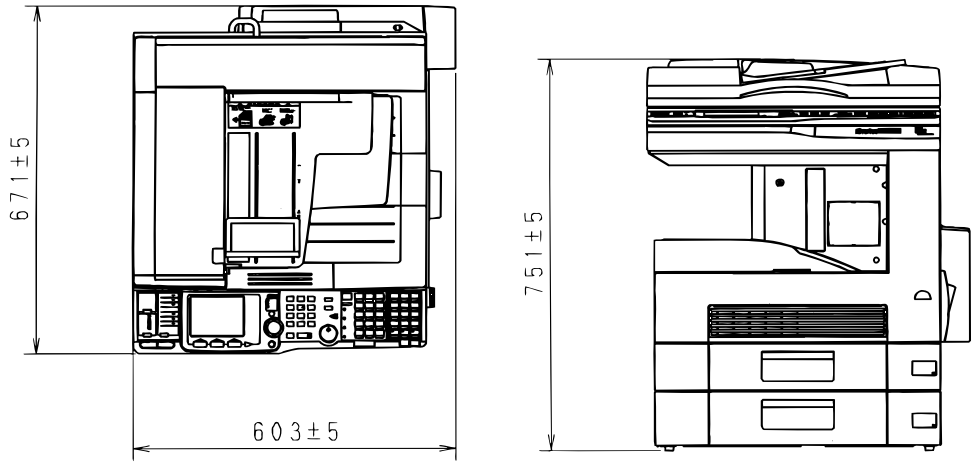
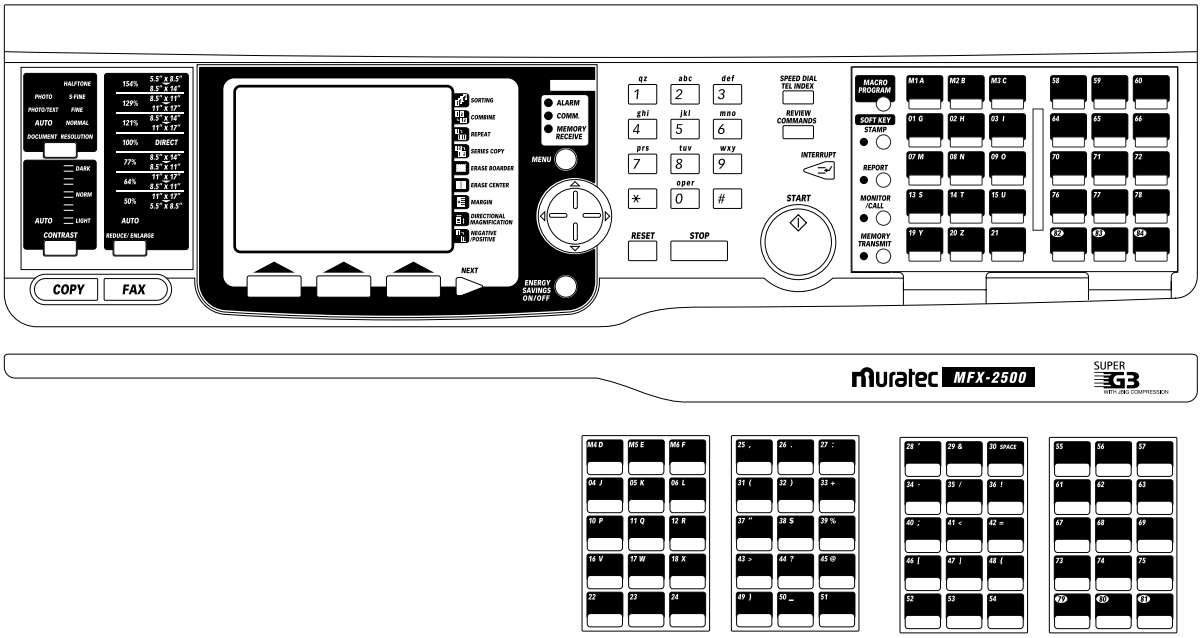
1.2 General specifications

Item	Specifications / Comments
Type	Multi-function product with flatbed scanner. Group 3 and V.34 HDX console type facsimile with high-speed facsimile transmitter and receiver.
Telephone network	PSTN (Public Switched Telephone Network) or equivalent.
Compatibility	ITU-T T.4 and T.30
Coding method	ITU-T-standard JBIG, MH, MR and MMR, Murata-proprietary MSE.
Communication method	• Full-duplex per ITU-T V.34 (only for control channel) • Half-duplex per ITU-T V.34, V.17, V.29, V.27ter and V.21
Modem	• 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800 and 2400 bps per ITU-T V.34. Control signal speed is 1200 or 2400 bps. • 14400, 12000, 9600, 7200, 4800 and 2400 bps with automatic fallback per ITU-T, V.17, V.29, V.27ter and V21. Control signal speed is 300 bps.
Dual Access	Allows up to four simultaneous operations
Display	LCD: 9 lines, 26 characters per line. Language: English/French/Spanish
Scanning method	CCD
Printing method	Dry electrophotographic printer
Effective scanning width	214 mm (8.4″), 277 mm (10.9″) (User selectable)
Printing margin	Upper: 4 mm, Lower: 4 mm, Right: 4 mm, Left: 4 mm
Acceptable document size	ADF (Auto Document Feeder) section Document size (Width × Length) Single sheet Max: 300 mm(11.8″) × 900 mm(35.4″) (Tx) 300 mm(11.8″) × 450 mm(17.7″) (Copy) Min: 120 mm(4.7″) × 100 mm(3.9″) Two or more sheets Max: 279 mm(11.0″) × 432 mm(17.0″) Min: 216 mm(5.8″) × 139 mm(4.1″) Document thickness Single sheet: 30.2g-104.7g/m^2 Two or more sheets: 52.3g-104.7g/ m^2
	FBS (Flatbed scanner) section (Width × Length) Max: 279 mm(11.0″) × 432 mm(17.0″) Min: No limit

Item	Specifications / Comments
Acceptable recording paper size	1st cassette (Multi purpose cassette): For fax reception: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF) For copying: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF), A3(SEF), B4(SEF), A4(SEF/LEF), B5(SEF/LEF), A5(SEF/LEF), A6(SEF), F4(SEF), Postcard(SEF), Custom-sized**, DL(SEF), COM10(SEF), Monarch(SEF), Executive(SEF/LEF) 2nd/3rd*/4th*/5th* cassette: For fax transmission: Letter(SEF/LEF), Legal(SEF), Ledger(SEF) For copying: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), A3(SEF), B4(SEF), A4(SEF/LEF), F4(SEF) Large Capacity Cassette*: Letter(LEF) Bypass tray*: Same paper sizes are available as 1st cassette for copying.
Acceptable recording paper type	1st cassette: Plain paper, PasteBoard/Labels, Transparency, Envelope/Postcard 2nd/3rd*/4th*/5th* cassette: Plain paper Large Capacity Cassette*: Plain paper Bypass tray*: Same paper types are available as 1st cassette for copying. Paper weight: 60-90g/m^2
Document Memory	16MB (1,330 pages)
Error Correction Mode (ECM)	Transmit and receive
Operating environment	Ambient temperature: 10 ℃ to 35 ℃ (50 ℉ to 95 ℉) Relative humidity: 15 % to 85 % with no condensation
Power requirements	120 VAC ± 10 %; 50-60 Hz
Power consumption	Standby: TBD W Memory Transmit: TBD W Receive: TBD W Copy: TBD W Maximum: TBD W (Simultaneous copying, communicating and scanning)

*: Option

**: Width: 140 mm(5.5″) to 432 mm(17.0″), Length: 90 mm(3.6″) to 297 mm(11.7″)

Item	Specifications / Comments
Dimensions: 603 (W) × 671 (D) × 751 (H) mm 	
Weight	67.7 Kg (148.9 lb) Weight includes: a toner bottle, a drum cartridge, Multi purpose cassette, 2nd cassette
Keypad layout TBD 	
Body Color	Muratec light gray (91-242)

1.3 Scanning specifications

Item	Specifications / Comments
Scanning method	CCD
Acceptable document size	ADF (Auto Document Feeder) section Document size (Width × Length) Single sheet Max: 300 mm(11.8″) × 900 mm(35.4″) (Tx) 300 mm(11.8″) × 450 mm(17.7″) (Copy) Min: 120 mm(4.7″) × 100 mm(3.9″) Two or more sheets Max: 279 mm(11.0″) × 432 mm(17.0″) Min: 216 mm(5.8″) × 139 mm(4.1″) Document thickness Single sheet: 30.2g-104.7g/m^2 Two or more sheets: 52.3g-104.7g/ m^2
	FBS (Flatbed scanner) section (Width × Length) Max: 279 mm(11.0″) × 432 mm(17.0″) Min: No limit
Document feeding direction (ADF)	Face up
Document size auto-detection	ADF section: Yes (Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF))
	FBS section: Yes (Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF))
Scanning width	214 mm (8.4″), 277 mm (10.9″) (User selectable)
Scanning resolution	Transmission: Normal: 8 dots/mm × 3.85 lines/mm (203 dpi × 98 lpi) Fine: 8 dots/mm × 7.7 lines/mm (203 dpi × 196 lpi) SuperFine: *16 dots/mm × 15.4 lines/mm (406 dpi × 392 lpi) Grayscale (Memory Tx): 8 dots/mm × 7.7 lines/mm (203 dpi × 196 lpi) Grayscale (Feeder Tx): *16 dots/mm × 15.4 lines/mm (406 dpi × 392 lpi) *: In the case that the remote fax has the ability of “16 dots/mm × 15.4 lines/mm”. If not, the super fine resolution is 8 dots/mm × 15.4 lines/mm, and the grayscale resolution in feeder transmission is 8 dots/mm × 7.7 lines/mm. Copy: Normal: N/A Fine: N/A SuperFine: 600 dpi × 600 lpi Grayscale: 600 dpi × 600 lpi Other: 400 dpi × 400 lpi (Selectable by user setting.)
Scanning contrast	5 levels (Auto/Manual adjustment)
Grayscale	256 levels
Automatic document feeder (ADF) capacity	Letter: 50 sheets / Legal: 50 sheets Ledger (11″×17″): 30 sheets
Document scanning time	Transmission: Normal: 0.8 sec/page Fine: 0.8 sec/page Super fine: 1.7 sec/page Grayscale(Memory Tx): 0.8 sec/page Grayscale(Feeder Tx): 1.7 sec/page Copy: Super fine: 2.6 sec/page Grayscale: 2.6 sec/page Other (400 dpi): 1.7 sec/page (Based on Letter(LEF) blank page)

1.4 Printer specifications

Item	Specifications / Comments
Printing resolution	Laser diode beam scanning 600 dpi × 600 lpi
Printing method	Dry electrophotographic printer
Fusing method	Heat roller
Printing margin	Upper: 4 mm, Lower: 4 mm, Right: 4 mm, Left: 4 mm
Printing speed	25 ppm (Based on Letter(LEF) paper)
Acceptable recording paper size	1st cassette (Multi purpose cassette): For fax reception: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF) For copying: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), Half-letter(SEF/LEF), A3(SEF), B4(SEF), A4(SEF/LEF), B5(SEF/LEF), A5(SEF/LEF), A6(SEF), F4(SEF), Postcard(SEF), Custom-sized**, DL(SEF), COM10(SEF), Monarch(SEF), Executive(SEF/LEF) 2nd/3rd*/4th*/5th* cassette: For fax transmission: Letter(SEF/LEF), Legal(SEF), Ledger(SEF) For copying: Letter(SEF/LEF), Legal(SEF), Ledger(SEF), A3(SEF), B4(SEF), A4(SEF/LEF), F4(SEF) Large Capacity Cassette*: Letter(LEF) Bypass tray*: Same paper sizes are available as 1st cassette for copying.
Acceptable recording paper type	1st cassette: Plain paper, PasteBoard/Labels, Transparency, Envelope/Postcard 2nd/3rd*/4th*/5th* cassette: Plain paper Large Capacity Cassette*: Plain paper Bypass tray*: Same paper types are available as 1st cassette for copying. Paper weight: 60-90g/m^2
Recording paper capacity	1st cassette: 250 sheets 2nd/3rd*/4th*/5th* cassette: 500 sheets Large Capacity Cassette*: 2,500 sheets Bypass tray*: 1 sheet
Output paper tray capacity	250 sheets Optional 2-Bin tray: Upper: 100 sheets, Lower: 250 sheets
Receive paper feeding direction	Face down
Warm up time	Under 60 seconds

*: Option

**: Width: 140 mm(5.5″) to 432 mm(17.0″), Length: 90 mm(3.6″) to 297 mm(11.7″)

1.5 Memory specifications

Item	Specifications / Comments
Document memory	16 MB (Standard) Optional memory upgrade: See the table below.
Document stored capacity	1,330 pages
Document memory backup	(Total memory capacity : Backup time) 16 MB: 60 hours 24 MB: 36 hours 40 MB: 12 hours 56 MB: 5 hours The backup battery requires about 48 hours to reach full charge after power to the fax unit is restored.
Memory usage indication	Shows on the LCD

Option memory upgrade

Built-in	Connector P5A	Connector P5B	Total memory	
8 MB	—	—	8 MB (8192 KB)	
8 MB	+ 8 MB	—	16 MB (16384 KB)	←Standard
8 MB	+ 8 MB	+ 8 MB	24 MB (24576 KB)	
8 MB	+ 8 MB	+ 24 MB	40 MB (40960 KB)	
8 MB	+ 24 MB	+ 24 MB	56 MB (57644 KB)	

1.6 G3 modem section

Transmission mode	V.17			
Modulation method	128 Pt. TCM	64 Pt. TCM	32 Pt. TCM	16 Pt. TCM
Transmission speed (bit/s)	14400	12000	9600	7200
Modulation speed (baud)	2400	2400	2400	2400
Carrier frequency (Hz)	1800			
Detection method	Synchronism			
Automatic equalizer	Automatic adaptive equalizer			

Transmission mode	V.29		V.27ter		V.21
Modulation method	16 Pt. QAM	8 Pt. QAM	8 Pt. PhM	4 Pt. PhM	FSK
Transmission speed (bit/s)	9600	7200	4800	2400	300
Modulation speed (baud)	2400	2400	1600	1200	300
Carrier frequency (Hz)	1700		1800		f (0) = 1850 f (1) = 1650
Detection method	Synchronism				FS
Automatic equalizer	Automatic adaptive equalizer				None

1.7 V.34 HDX modem section

Transmission mode	V.34							
Modulation method	TCM							
Transmission speed (bit/s)	33600	31200	28800	26400	24000	21600	19200	16800
Symbol rate (baud)	3429							
	None	3200						
	None		3000					
	None			2800				
	None					2400		
Carrier frequency (Hz)	3429 baud: 1959 high, 1959 low							
	3200 baud: 1920 high, 1829 low							
	3000 baud: 2000 high, 1800 low							
	2800 baud: 1867 high, 1680 low							
	2400 baud: 1800 high, 1600 low							
Detection method	Synchronism							
Automatic equalizer	Automatic adaptive equalizer							

Transmission mode	V.34					
Modulation method	TCM					
Transmission speed (bit/s)	14400	12000	9600	7200	4800	2400
Symbol rate (baud)	3429					None
	3200					None
	3000					None
	2800					None
	2400					
Carrier frequency (Hz)	3429 baud: 1959 high, 1959 low					
	3200 baud: 1920 high, 1829 low					
	3000 baud: 2000 high, 1800 low					
	2800 baud: 1867 high, 1680 low					
	2400 baud: 1800 high, 1600 low					
Detection method	Synchronism					
Automatic equalizer	Automatic adaptive equalizer					

1.8 Features and Functions

1.8.1 Dialer

Item	Specifications / Comments
Autodialer	300 total; 78 one-touch, 222 speed dial. (Up to 40 digits per location; 24 characters per location ID)
Programmable one-touch.	6 total The programmable one-touch keys simplify complex fax operation. The following multi-step operations can be programmed. *Fax communication* • Delayed transmission • Broadcasting • Regular polling • Batch transmission • F-code transmission • F-code polling
Soft key	4 total *Fax communication* Set the following On/Off operation into the Soft keys. • Memory transmission on/off (Default setting) • Transmission confirmation stamp on/off (Default setting) • Confirmation report on/off (Default setting) • Hook/Call request (Default setting) • Cover page on/off • TTI on/off *Copy* Pressing the soft key, the following copy setting display will appear. • Combine • Repeat • Series copy • Erasing boarder • Erasing center • Binding margin • Directional magnification • Positive/negative copy • Duplex (with optional Duplex unit) • Booklet (with optional Duplex unit)
Macro key	6 total The macro keys simplify multiple fax or copy operations. Up to 60 steps can be programmed in one macro key. Up to 130 characters can be entered in the title of the macro key.
Telephone index	Select autodialer entries in LCD by Location ID name.
Type of dialing	Tone or pulse (10 pps)
Dialing pause time	2-10 seconds. (Initial setting: 2 seconds)
Redial	Auto redial in fax mode, programmable for 2 to 15 attempts (default: 2) at 1 to 5 minutes intervals (default: 1); manual last-number redial.
PIN access	Available
On-hook dialing	Available
Dialing in the event of a power failure	Works only if the handset is attached. The fax can receive a telephone call, but it cannot send or receive a fax message.

1.8.2 Fax Transmitting

Item	Specifications / Comments
Transmit Terminal Identifier (TTI)	Alphanumeric or symbol, up to 22 characters. Subscriber ID: Numeric, up to 20 characters 3 patterns of TTI can be registered.
Memory transmission	Available.
Feeder transmission	Available.
Quick memory transmission	Available.
Rotate transmission	Available. (Letter only)
Delayed transmission	Programmable up to 31 days in advance.
Broadcasting	Up to 330 locations.(78 one-touch, 222 speed dial and 30 normally dial).
Relay broadcast / Relay broadcast initiation (ITU-T sub-address compatible)	Specify up to 300 numbers for remote “hub” unit using a one-touch key, a speed-dial number or a call group number. When receiving a document via ITU-T sub-addressing from another machine to F-Code relay box, your fax machine will relay it to other machine you set up on your relay box. Also, you can send (relay broadcast initiation) the document to hub machine’s F-Code box with ITU-T sub-address and you get the hub machine relayed it to other machine.
Group communication	Allows multiple broadcasting or polling locations to be placed in up to 32 call groups. Up to 300 locations can be placed in a group.
SecureMail transmission (ITU-T sub-address compatible))	ITU-T sub-address: Up to 20 characters. ITU-T password: Up to 20 characters.
Delayed commands	Store up to 100 delayed commands.
Security transmission	Compares the last 4 numbers of the dialed fax number to the last 4 digits of the subscriber ID.
Batch transmission	5 boxes with a location ID of 24 characters. 40 files per box. Programmable up to 24 hours per box.
Numbering pages	Just before sending a fax, you can set your fax machine to number each page in order. This will help the recipient keep track of all the pages.
Cover page	Cover page shows date and time, sender’s name and fax number, and a 40-character user-programmable message.
Department code	For tracking transmissions by department. Hold up to 100 department codes.
Call request	During sending or receiving, a voice conversation can be initiated on the same call after each page is printed. (Works only if the optional handset is attached.) **Note:** Not available at V.34 communication.

1.8.3 Fax Receiving

Item	Specifications / Comments
Receive mode	Tel ready, Fax ready, Fax/Tel ready, Tel/Fax ready and Ans/Fax ready mode; user selectable.
Receive reduction rate	**Auto:** Automatically reduces printouts from 100 % to 25 %. Reduction margin: 0-85 mm (Initial setting: 40 mm) **Fixed reduction rate:** Select the fixed reduction rates from 100%, 97%, 91%, 81% or 75%.
Rotate reception	Available.
Half-page reception	Available. (This feature tells the machine to combine two of half-page receptions onto a single sheet.)
SecureMail reception (ITU-T sub-address compatible)	Up to 50 mailboxes for receiving, 4 digits passcode. Holds a document up to 31 days (or no limit). ITU-T sub-address: Up to 20 characters. ITU-T password: Up to 20 characters.
Block junk fax	Ability to reject “junk fax” receptions: user selectable three options. Specify up to 50 numbers in the blocked numbers list.
Closed network	Proprietary network option.
Out of paper reception	Receives up to 250 communications to memory if recording paper or toner is empty.
Security reception	You can tell the machine to keep all received faxes in memory (but not print them) after a certain time; then, later, you instruct it to go ahead and print out the saved faxes.
Distinctive Ring Detection	Ability to answer on specific ring patterns. User selectable
Number of rings	Select 1 to 10 rings. (Initial setting: 2 rings.)
Remote reception upon second phone connection	Fax is activated upon termination of a call that is answered by a telephone connected to second phone jack.

1.8.4 Polling

Item	Specifications / Comments
Regular polling	Retrieves a document from the remote fax machine.
Delayed polling	Programmable up to 31 days in advance.
Continuous polling	Retrieves continuously a document from any remote fax machine for the designed time.
Database polling (ITU-T sub-address compatible)	Retrieves a document stored in a memory box in the remote fax machine. You must enter a ITU-T sub-address and password to retrieve a document from any remote fax’s memory box.
Polled transmission	A remote fax machine retrieves a document stored in your fax machine.

1.8.5 Copy

Item	Specifications / Comments
FCOT (First Copy Out Time)	TBD
Multiple copies	Up to 99
Copy reduction and enlargement rate	**Manual:** Reduces/enlarges copies by the 1 % ratio from 400 % to 25 %. **Fixed:** Select the fixed rates from 154, 129, 121, 77, 64, 50 %
Directional magnification	Reduces/enlarges copies at different ratios horizontally and vertically. From 25% to 400% From 0.1″ to 50.0″
Copy protect	Available.
Copy reservation	Available, up to 10 jobs.
Interrupt copy	Available.
Rotate copy	Available.
Shift sorting	Available (with optional shift tray)
Editing the copy image	Available the following copy image editing. • Binding margin: 0 mm to 30 mm (0″ to 1.0″) Default: 0 mm (0″) • Erasing center: 1 mm to 50 mm (0.1″ to 2.0″) Default: 1 mm (0.1″) • Erasing boarder: 4 mm to 50 mm (0.2″ to 2.0″) Default: 4 mm (0.2″) • Series copy • Combine: 2 in 1, 4 in 1, 8 in 1 • Repeat: 2, 4, 8 repeats • Separate line (for Combine and Repeat): 0.1 mm to 0.9 mm (0.01″ to 0.05″) Default: 0.3 mm (0.01″) • Booklet copy • Positive/negative copy • Duplex copy: Available with optional duplex unit. Single-sided → two-sided, Bound documents(Book) → two-sided

1.8.6 Other features

Item	Specifications / Comments
Silent operation	Available
Operation protect	Not Available
Second telephone jack	Available
Daylight saving	Available
Distinctive Ring Detection	Available
Transmission confirmation stamp	If you set, it will automatically place a small stamp mark on the front of each original document that it successfully scans.

1.8.7 Reports

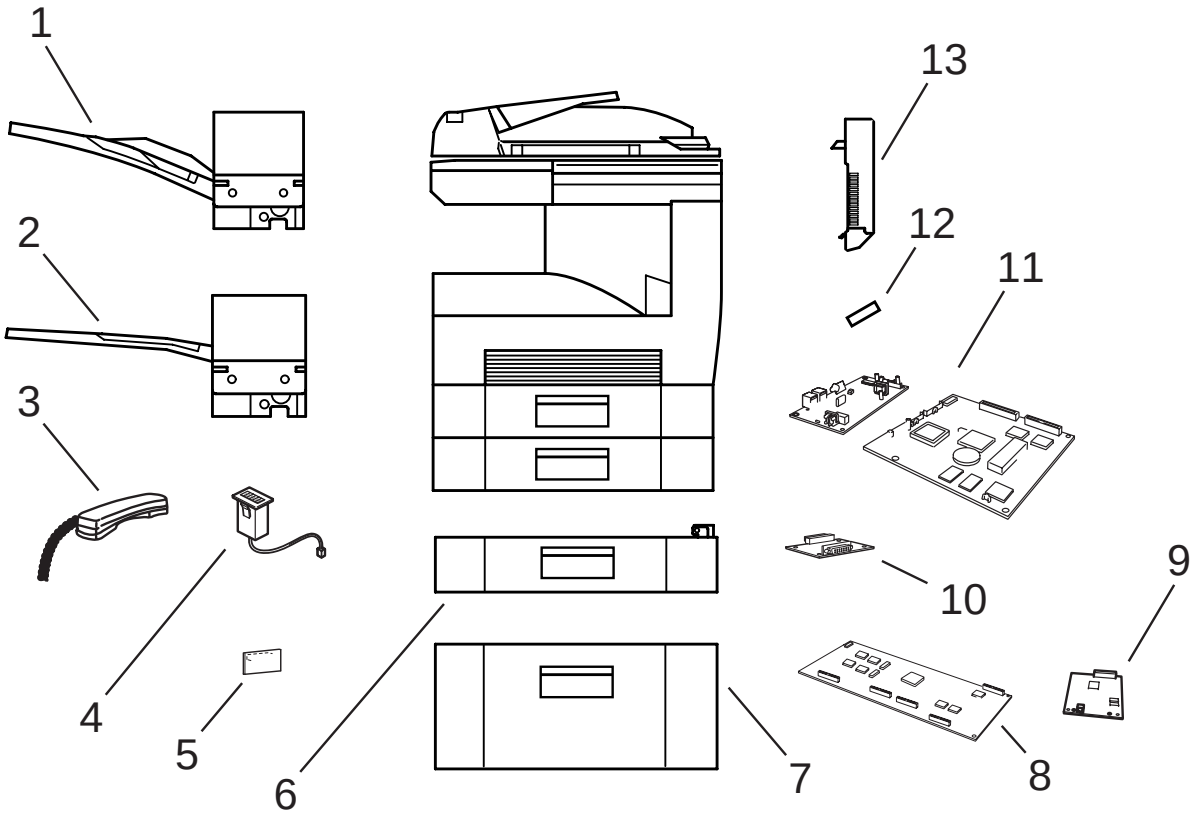
Report	Description
One-touch dial list	Prints numbers stored in the one-touch keys.
Speed dial list	Prints phone numbers stored in speed dial locations.
Programmable one-touch list	Prints numbers stored in programmable one-touch keys.
Group number list	Prints groups stored in the autodialer.
User settings list	Prints current machine settings as programmed by the user.
Command list	Prints the delayed commands.
Confirmation report	Transmit Confirmation Report (TCR) or Receive Confirmation Report (RCR); User selectable on/off.
Activity journal	Prints a cumulative total of the last about 100 transmissions and/or receptions; user selectable as manual or automatic.
Cover page	Transmit cover page showing date, receiver's and sender's names, and a 40-character user-programmable message.
Batch transmission box list	Batch transmission boxes stored remote fax number and transmit starting time.
Batch transmission file list	Print the files number list of documents stored in the batch transmission box.
Department time list	Print the total communication time and quantity of pages printed for each department code.
F-code box list	List of F-code boxes stored in fax machine.
F-code box file list	Print the box and files number list of documents stored in the F-code box.
F-code reception message	Notifies of F-code box receptions.
Blocked numbers list	List of the blocked number.
Function list	Prints a program mode list showing user programming tree.
Power failure report	Prints if any documents in memory were erased due to power failure.
Check message	Prints if communication error occurs; accompanied by audible alarm.
Machine setting list	Prints current machine settings as programmed by user.
Fax setting list	Prints current fax settings as programmed by user.
Copy setting list	Prints current copy settings as programmed by user.
Macros list	Prints a list of Macro titles.
Fax Forward list	Print the Fax Forward patterns.

1.9 Supply Yields

Item	Specifications / Comments
Toner bottle	11,000 pages (All yields based on letter-sized sheets, 6 % document coverage and three-page interval printing.)
Drum cartridge	67,000 pages
Image transfer roller	150,000 pages
Document separator roller	100,000 pages
Retard roller	100,000 pages
Paper pick up roller	120,000 pages
Paper dust remover	120,000 pages
Fuser unit	300,000 pages
Ozone filter	100,000 pages
Exposure lamp	1,000 hours (continuous lighting)
Stamp	3,000 times

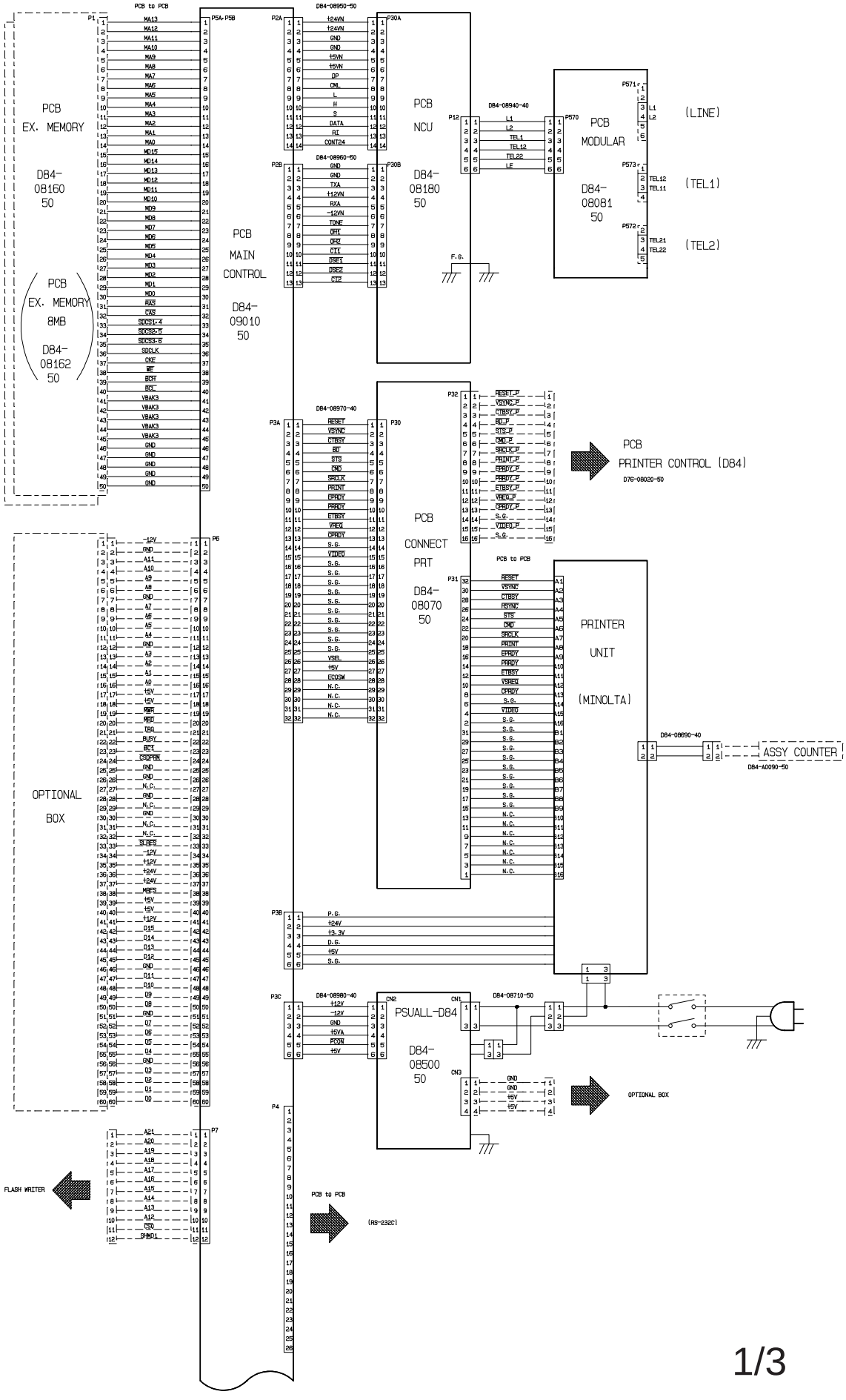
1.10 Option

No.	Item	Specifications / Comments
1	Shift tray	Yes
2	2-Bin tray	Yes
3	Handset	Mark-4 simple type (without numeric keypad)
4	Mechanical page counter	6 digits
5	Memory	8 MB, 24 MB (See the table on page 1-6.)
6	Paper feed unit	500 sheets × 3
7	Large capacity cassette	2,500 sheets × 1
8	Printer controller Kit	Yes (OP-100)
9	Network printer Kit	Yes (NP-200)
10	RS-232C interface	Yes
11	Second phone line kit	Yes (AL-250)
12	Bypass tray	Yes
13	Duplex unit	Yes

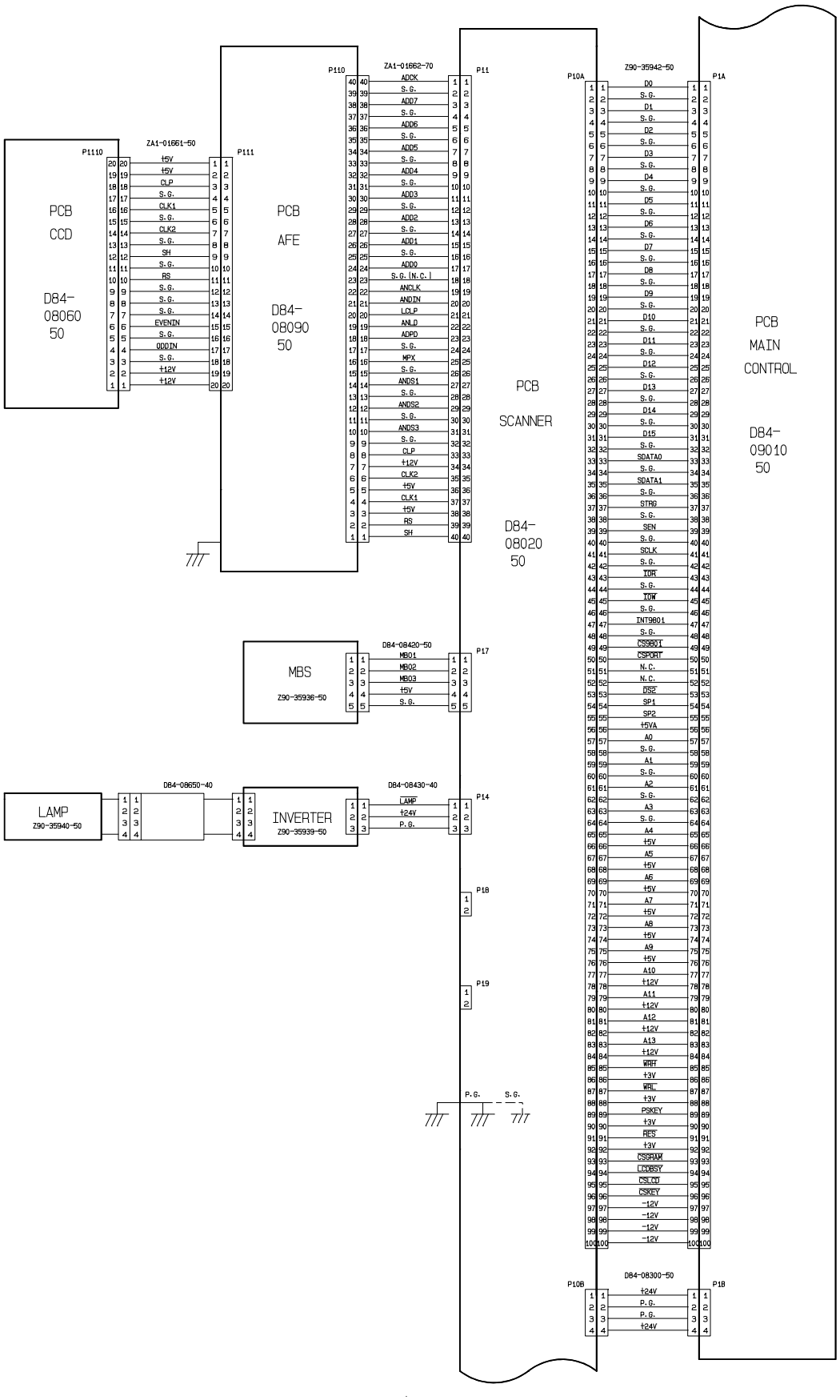


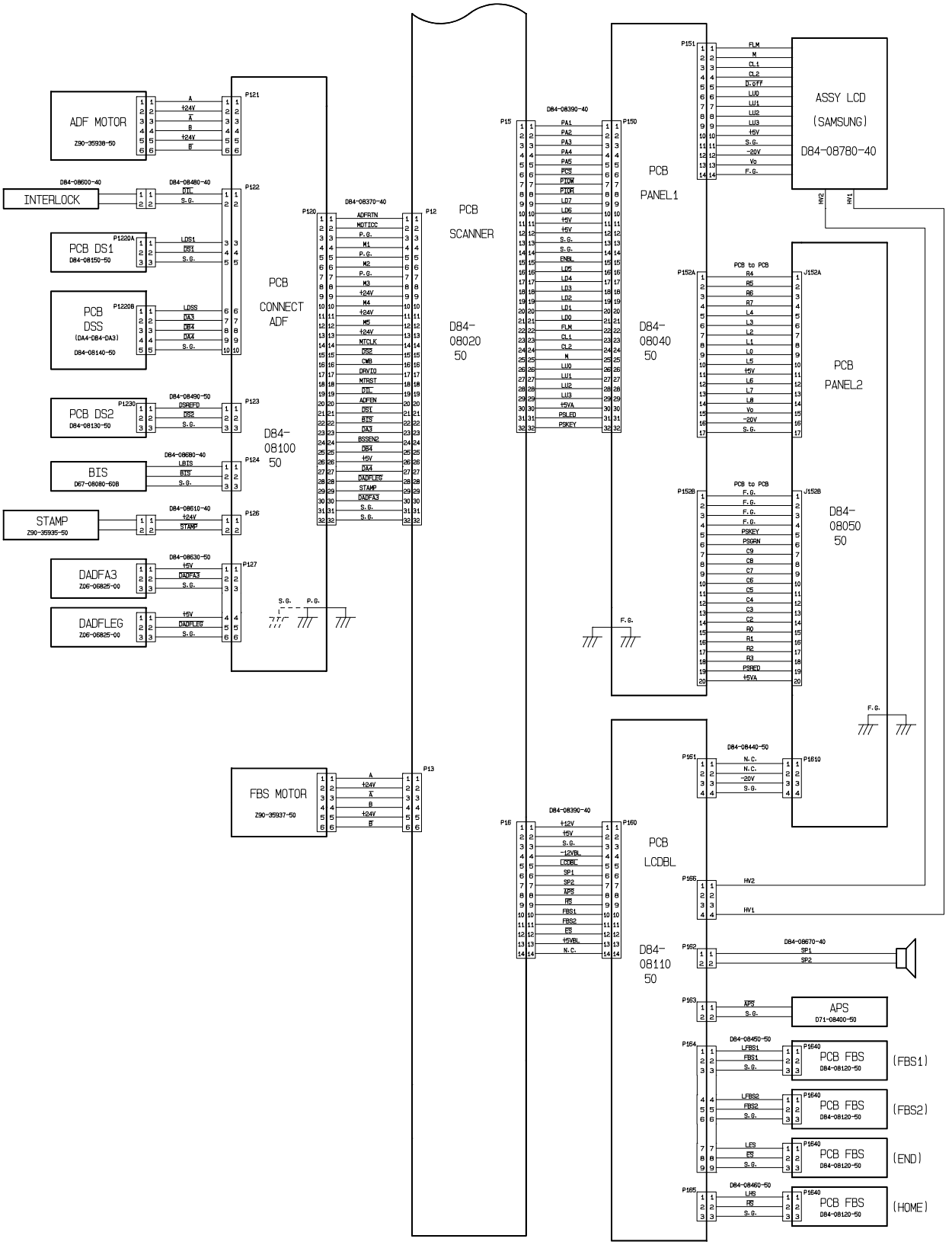
Section2
Machine Composition
2.1 Interconnect Block Diagram (Scanner)

See next page.


PCB to PCB
P1
P5A, P5B
PCB
EX. MEMORY
D84-
08160
50
PCB
EX. MEMORY
8MB
D84-
08162
50
PCB
MAIN
CONTROL
D84-
09010
50
D84-08950-50
P2A
P30A
PCB
NCU
D84-
08180
50
D84-08960-50
P2B
P30B
F.G.
D84-08940-40
P12
P570
PCB
MODULAR
D84-
08081
50
P571
(LINE)
P573
(TEL1)
P572
(TEL2)
L1
L2
TEL1
TEL12
TEL22
LF
TEL12
TEL11
TEL21
TEL22
D84-08970-40
P3A
P30
PCB
CONNECT
PRT
D84-
08070
50
P32
PCB
PRINTER CONTROL (D84)
D76-08020-50
PCB to PCB
P31
PRINTER
UNIT
(MINOLTA)
D84-08690-40
ASSY COUNTER
D84-A0090-50
OPTIONAL
BOX
P6
P7
FLASH WRITER
P3B
P3C
D84-08980-40
CN2
CN1
CN3
PSUALL-D84
D84-
08500
50
D84-08710-50
OPTIONAL BOX
P4
PCB to PCB
(RS-232C)

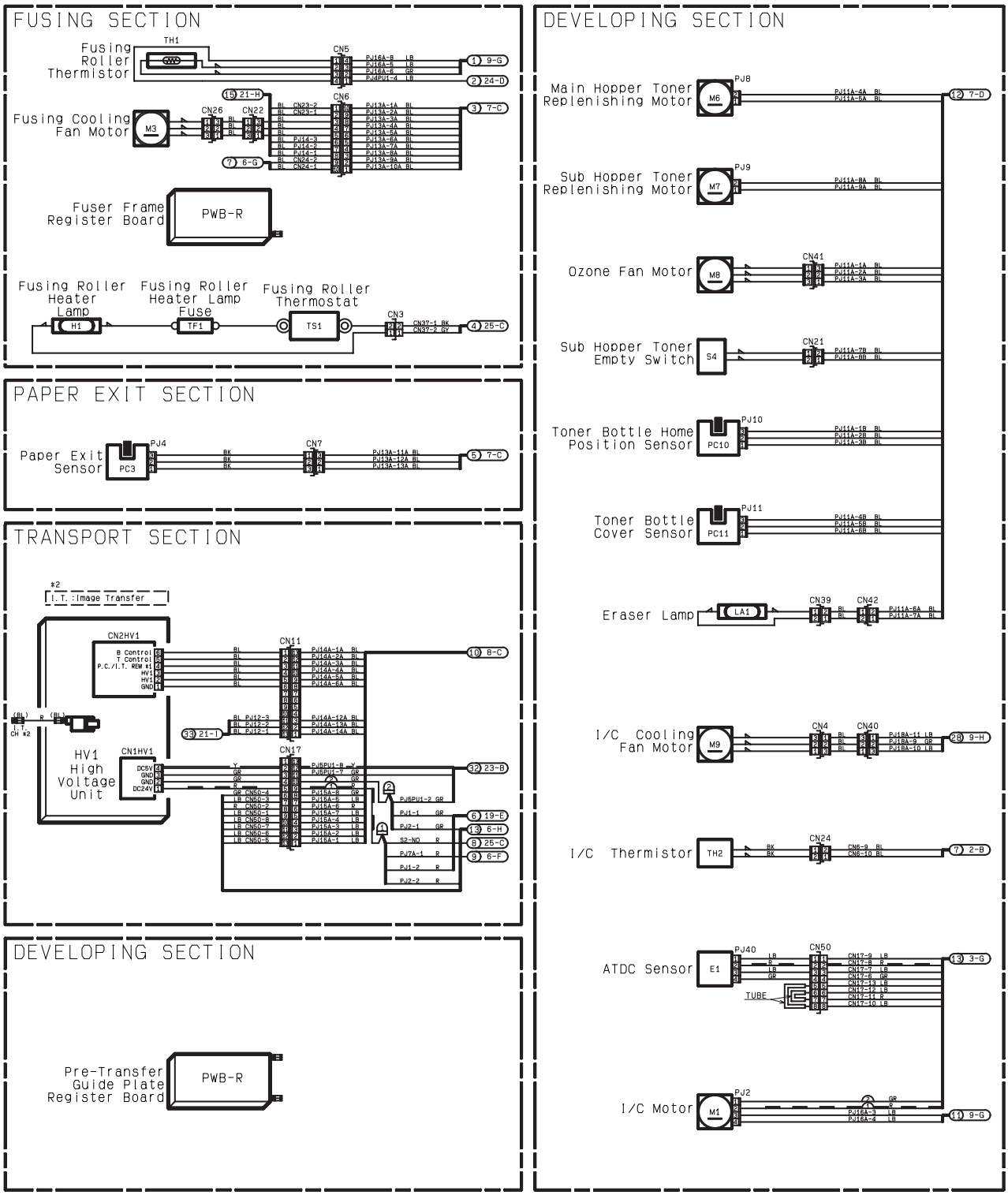
1/3

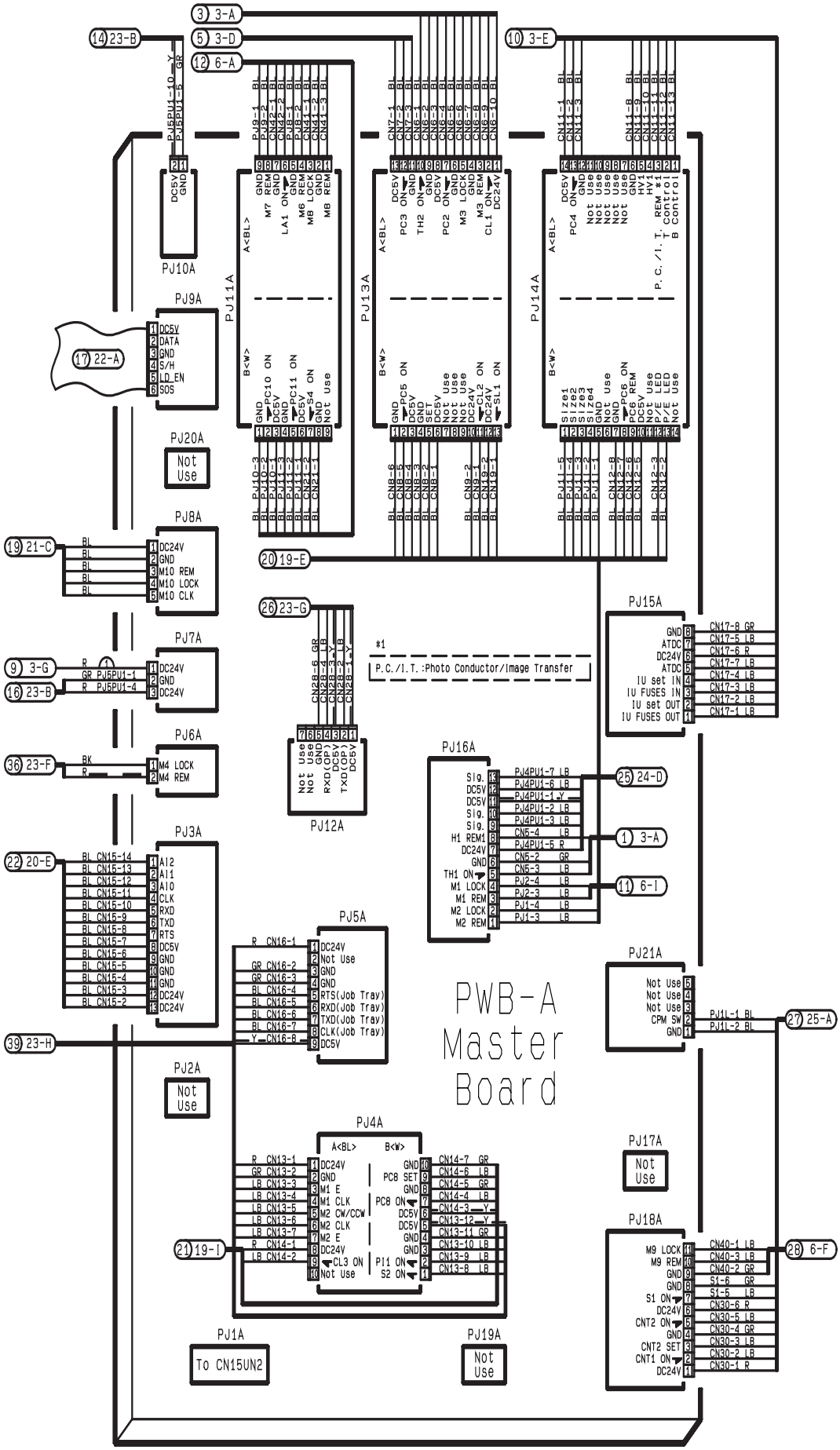

PCB
CCD
D84-
08060
50
P1110
ZA1-01661-50
P111
PCB
AFE
D84-
08090
50
P110
ZA1-01662-70
P11
PCB
SCANNER
D84-
08020
50
P10A
Z90-35942-50
P1A
PCB
MAIN
CONTROL
D84-
09010
50
MBS
Z90-35936-50
D84-08420-50
P17
LAMP
Z90-35940-50
D84-08650-40
INVERTER
Z90-35939-50
D84-08430-40
P14
P18
P19
P.G.
S.G.
P10B
D84-08300-50
P1B

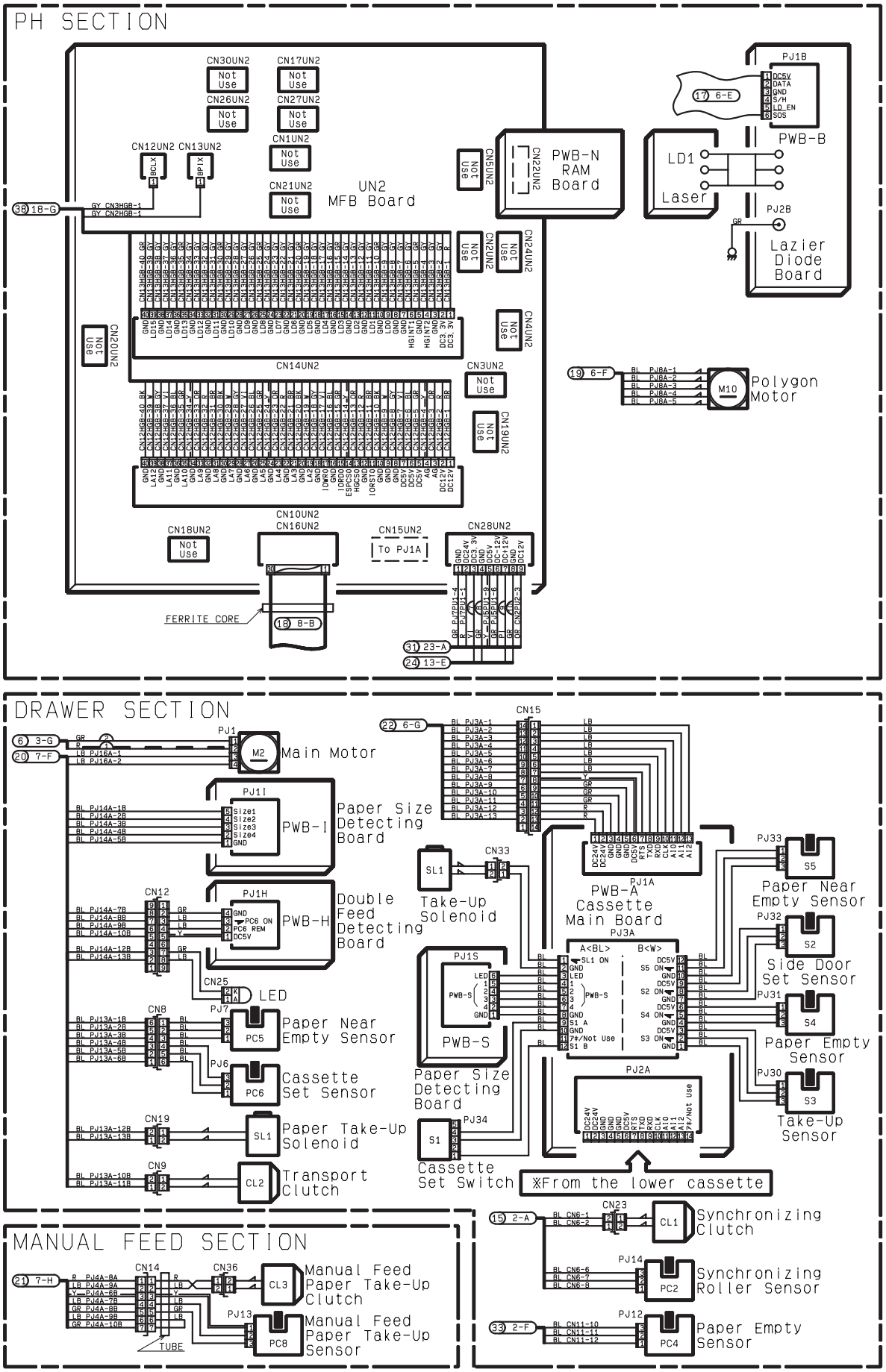

ADF MOTOR
Z90-35938-50
INTERLOCK
D84-08600-40
PCB DS1
D84-08150-50
PCB DSS
(DA4-DB4-DA3)
D84-08140-50
PCB DS2
D84-08130-50
BIS
D67-08080-60B
STAMP
Z90-35935-50
DADFA3
Z06-06825-00
DADFLEG
Z06-06825-00
FBS MOTOR
Z90-35937-50
PCB CONNECT ADF
D84-08100 50
PCB SCANNER
D84-08020 50
PCB PANEL1
D84-08040 50
PCB PANEL2
D84-08050 50
PCB LCDBL
D84-08110 50
ASSY LCD (SAMSUNG)
D84-08780-40
APS
D71-08400-50
PCB FBS
D84-08120-50
(FBS1)
(FBS2)
(END)
(HOME)

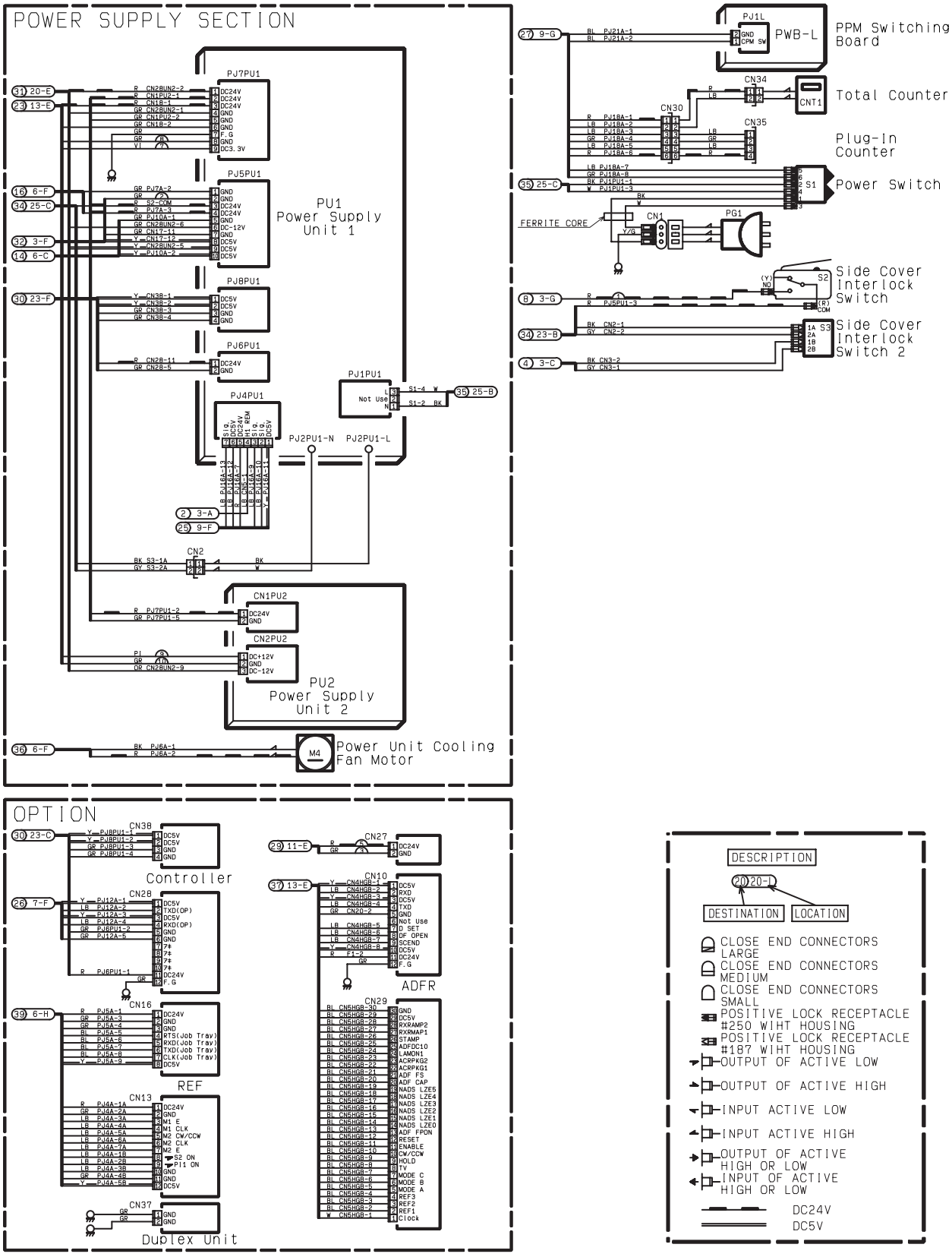
3/3

2.2 Interconnect Block Diagram (Printer)




PWB-A
Master
Board
P.C./I.T.:Photo Conductor/Image Transfer
*1
PJ1A
To CN15UN2
PJ2A
Not Use
PJ3A
PJ4A
PJ5A
PJ6A
PJ7A
PJ8A
PJ9A
PJ10A
PJ11A
PJ12A
PJ13A
PJ14A
PJ15A
PJ16A
PJ17A
Not Use
PJ18A
PJ19A
Not Use
PJ20A
Not Use
PJ21A


PH SECTION
UN2
MFB Board
PWB-N
RAM
Board
PWB-B
LD1
Laser
Lazier
Diode
Board
Polygon
Motor
FERRITE CORE
DRAWER SECTION
Main Motor
Paper Size
Detecting
Board
Double
Feed
Detecting
Board
LED
Paper Near
Empty Sensor
Cassette
Set Sensor
Paper Take-Up
Solenoid
Transport
Clutch
Take-Up
Solenoid
PWB-A
Cassette
Main Board
Paper Near
Empty Sensor
Side Door
Set Sensor
Paper Empty
Sensor
Take-Up
Sensor
Cassette
Set Switch
※From the lower cassette
Synchronizing
Clutch
Synchronizing
Roller Sensor
Paper Empty
Sensor
MANUAL FEED SECTION
Manual Feed
Paper Take-Up
Clutch
Manual Feed
Paper Take-Up
Sensor
TUBE


POWER SUPPLY SECTION
PU1
Power Supply
Unit 1
PU2
Power Supply
Unit 2
Power Unit Cooling
Fan Motor
PWB-L
PPM Switching
Board
Total Counter
Plug-In
Counter
Power Switch
Side Cover
Interlock
Switch
Side Cover
Interlock
Switch 2
FERRITE CORE
OPTION
Controller
ADFR
REF
Duplex Unit
DESCRIPTION
DESTINATION
LOCATION
CLOSE END CONNECTORS LARGE
CLOSE END CONNECTORS MEDIUM
CLOSE END CONNECTORS SMALL
POSITIVE LOCK RECEPTACLE #250 WIHT HOUSING
POSITIVE LOCK RECEPTACLE #187 WIHT HOUSING
OUTPUT OF ACTIVE LOW
OUTPUT OF ACTIVE HIGH
INPUT ACTIVE LOW
INPUT ACTIVE HIGH
OUTPUT OF ACTIVE HIGH OR LOW
INPUT OF ACTIVE HIGH OR LOW
DC24V
DC5V

2.3 Scanning Section

2.3.1 ADF Section

When a document is placed into the document feeder, Document Sensor 1 (DS1) is activated and you will hear the short beep. The width of document is detected by DB4 and DA3 sensors and length of document is detected by DADFA3 and DADFLEG sensors.

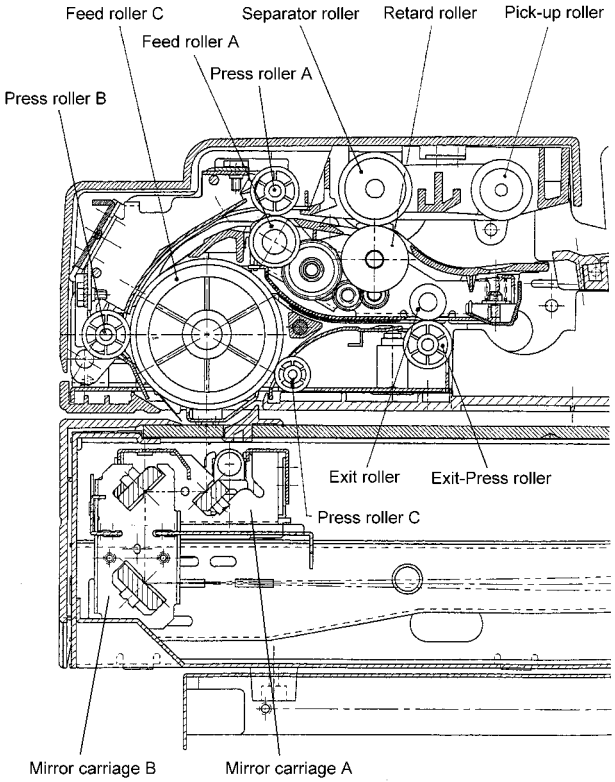
Document separation is the process that allows a multi-page document to go through the scanner one page at a time. Separation occurs through the action of the separator roller and retard roller.
As shows in the illustrations, documents in the feeder are pressed against the separator roller. The bottom document is separated from the remaining documents by the friction of the retard roller.

Following document separation, the feed roller causes the document to advance. As it advances, the leading edge of the document activates the Document Sensor 2 (DS2) sensor. Once DS2 is activated, the feed roller continues to rotate until the document reaches the scan wait position. The machine uses the distance from DS2 to the scan wait position and the diameter of the feed roller to determine the number of rotations necessary to feed the document to the scan wait position.

When the document reaches the scan wait position, the machine waits for the next command. It will start scanning the document when either the start or copy key is pressed. The light from the scanner lamp strikes the face of the document and is reflected into the lens through mirrors A, B, and C. In case the light intensity along the length of the scanner lamp is not uniform, shading compensation is provided to ensure even illumination.

As the reflected image passes through the lens, it is focused onto the charged coupled device (CCD). The CCD then converts the dark and light areas of the image into electrical impulses, or image data.

When DS2 detects the trailing edge of the document, the image signal output is turned off. The scanner continues to remain active for a few more seconds in case there is another document to follow.

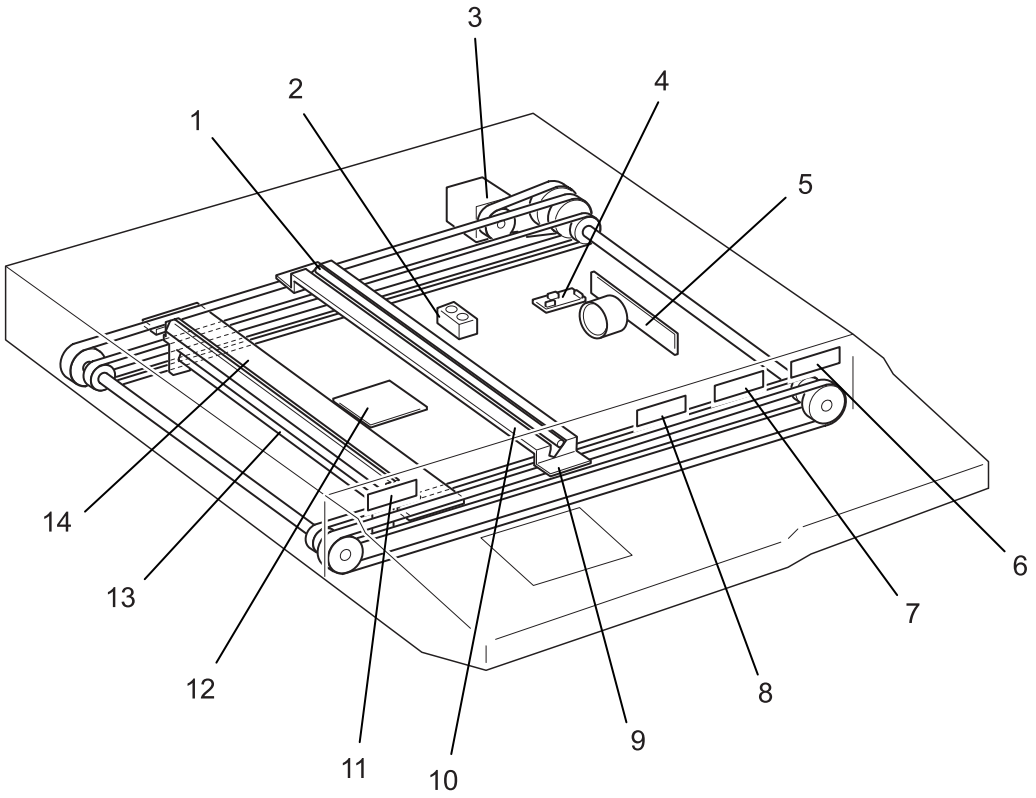


Document scanning in ADF section

The scanned document is discharged through the document exit by the exit roller

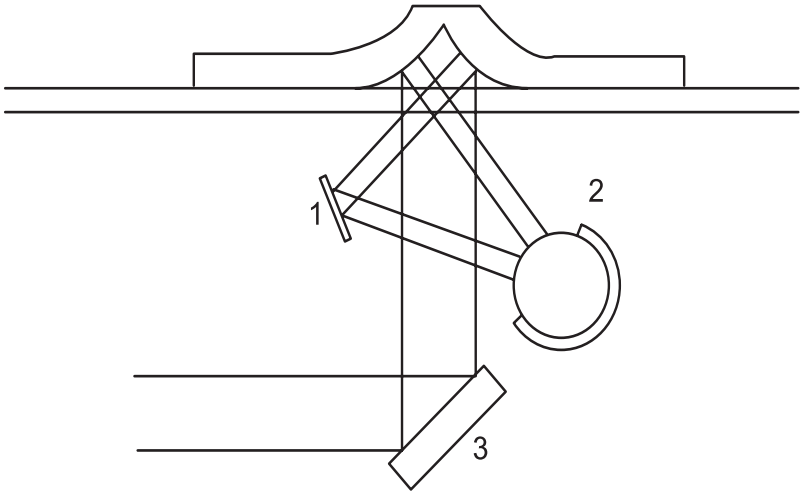
2.3.2 FBS section

- Light reflected from the original passes through three mirrors and a lens to form a reduced image on the CCD Sensor as the Scanner is moved by the Scanner Motor. The CCD sensor converts the light pattern (image data) into an electrical image signal.
- The electrical image signal is then output to the Main Board.



1. Exposure Lamp
2. Original length detecting sensor (Multi Beam sensor)
3. FBS Motor
4. Inverter Board
5. CCD Board (CCD) and Lens
6. Scanner End Position Sensor
7. B4 sensor
8. A4 sensor
9. Mirrors Carriage A
10. Mirror A
11. Scanner Home Position Sensor
12. Mirror B and C
13. Mirrors Carriage B

2.3.2.1 Exposure Section: Construction and Function



1 Reflector Tape
When a book or other bound original is copied, the paper in the area near the binding generally fails to come flush against the glass, so that the copy of these areas is generally too dark. The Reflector Tape reduces this problem by reflecting light from the Exposure Lamp onto these areas of the original.

2 Exposure Lamp
A fluorescent lamp is used to illuminate the original.

3 Mirror A
Directs the reflected light from the original to the Mirror B.

2.3.2.2 Original Size Detection

- When the machine is in Auto Paper or Auto Size, the original length detecting sensor mounted in the FBS section receive light reflected off the original to allow the machine to determine the original length size. And the CCD detects original width by reflecting light from the Exposure Lamp.

<Original Size Identification: Inch Areas>

Original Size	Multi Beam Sensor (Detect length of original) Control Signal			CCD (Detect width of original)
	MB2	MB1	MB0	
Letter L	❍	–		❍
Letter C		–		❍
Legal L	❍	–	❍	❍
Half Letter L		–		❍
Half Letter C		–		❍
11×17 L	❍	–	❍	❍

❍: Detected by multi beam sensor or CCD, –: Not used; L: Lengthwise; C: Crosswise

<Original Size Identification: Metric Areas>

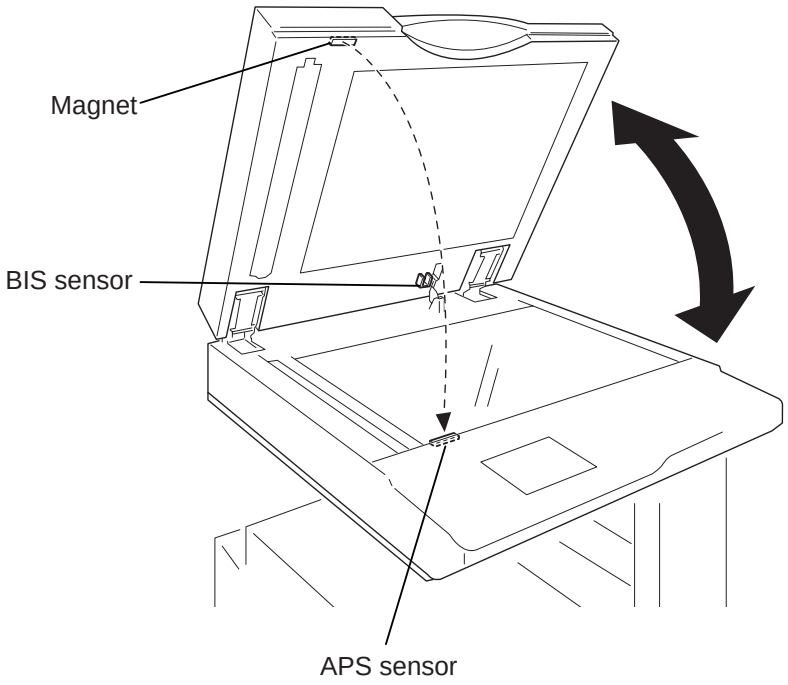
Original Size	Beam Sensor (Detect length of original)	CCD (Detect width of original)
A3L	❍	❍
A4L	❍	❍
A4C		❍
A5L		❍
A5C		❍
B4L	❍	❍
B5L		❍
B5C		❍

❍: Detected by beam sensor or CCD; L: Lengthwise; C: Crosswise

2.3.2.3 Original Size Detection Timing

The copier CPU affirms and resets the readings of the original size at the following timings.

- Takes size readings:
  When the BIS sensor is deactivated.
- Affirms size readings:
  When the Start key is pressed with the BIS sensor activated or the APS sensor deactuated.
- Resets size readings:
  When the APS sensor is deactuated.



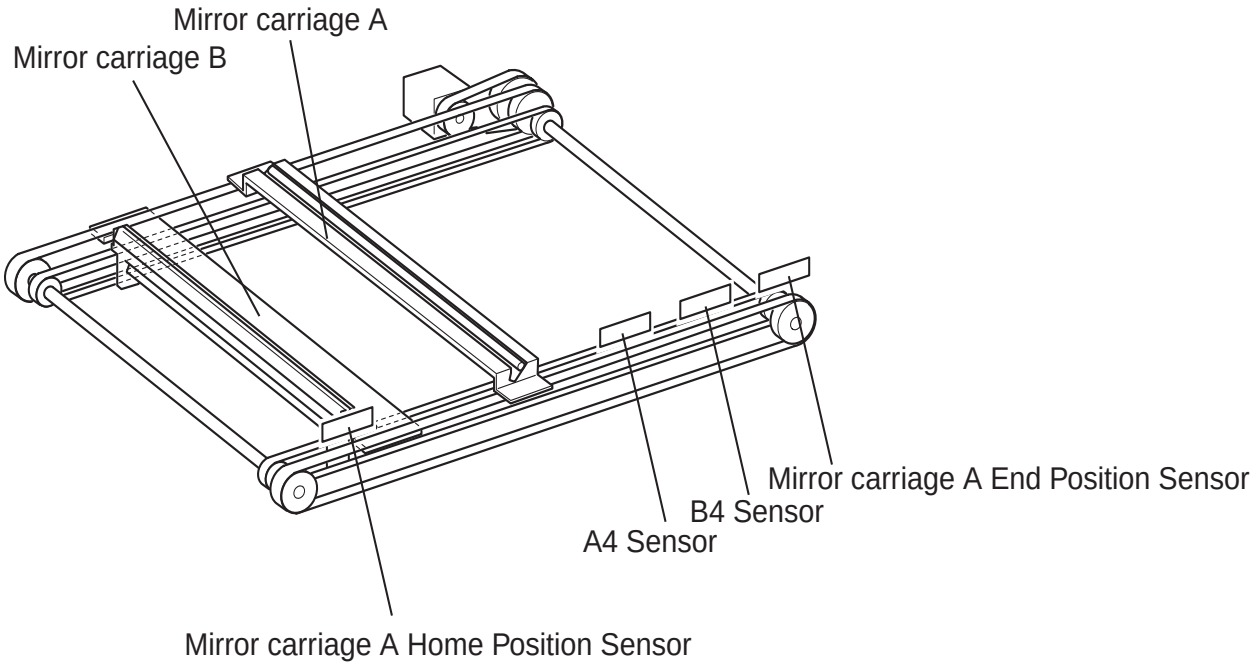
2.3.2.4 Mirror Carriage A and Mirror Carriage B Moving Mechanism

<Mirror Carriage Ar>

- During a scan, the Mirror Carriage A projects an even amount of light from the Exposure Lamp onto the entire surface of the original. The light is reflected from the original to the Mirror A of the Mirror Carriage A and then to the Mirror B and Mirror C of the Mirrors Carriage B.
- The Mirror Carriage A is driven by the FBS Motor and front and rear Scanner Drive belts.
- Scanner speed is determined by the set zoom ratio in reference to the full size mode.
- The Mirror Carriage A is at home position when Scanner Home Position Sensor is blocked. This position serves as the reference for the scan motion.
- The A4 sensor and B4 sensor restricts the movement of the Mirror carriage A according to the original document size.

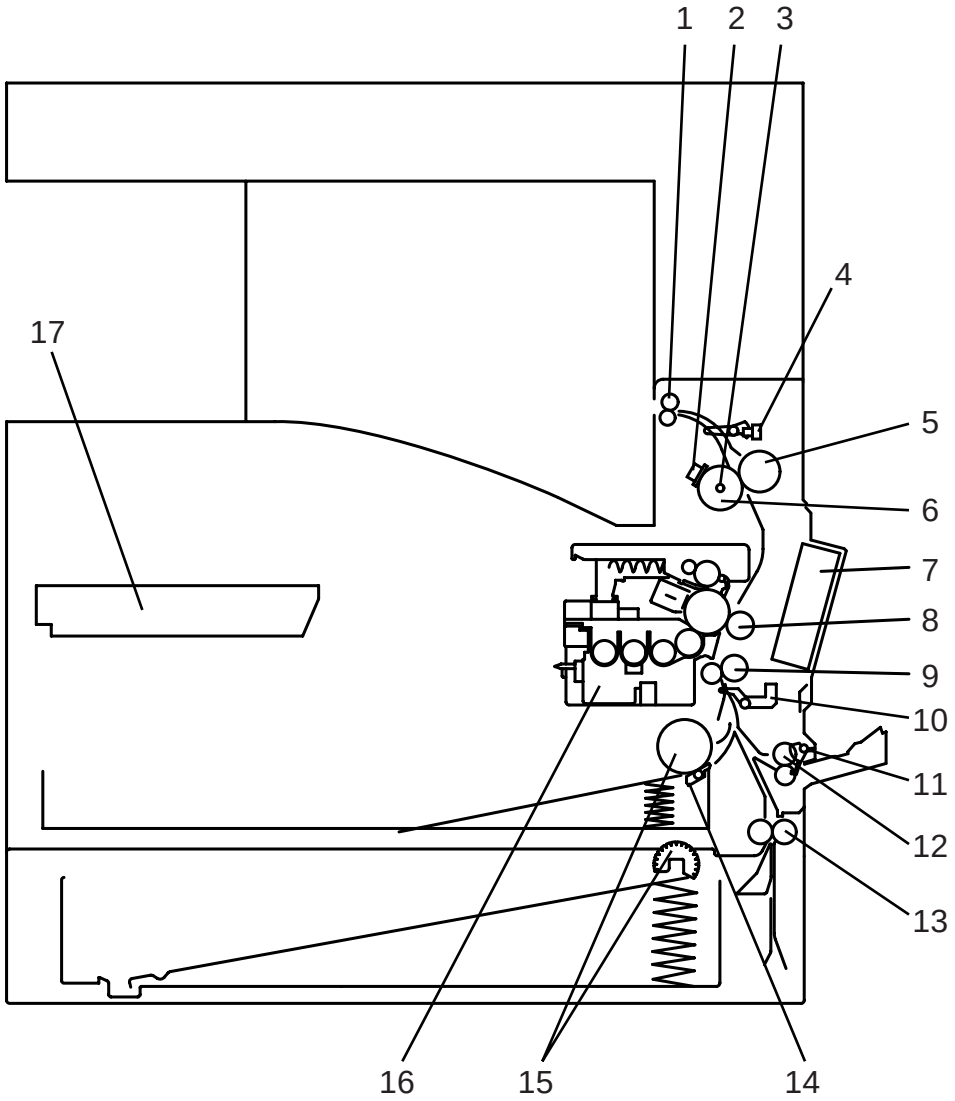
<Mirrors Carriage B>

- The Mirror B and Mirror C are mounted to their holder at right angles to each other. They direct the light reflected off the Mirror A through the lens to the CCD.
- The Mirror Carriage B is also moved by the Scanner Drive belts and pulleys driven by the FBS Motor. It travels at a speed half that of the Mirror Carriage A, thereby keeping constant the optical path length between the Original Glass and lens.



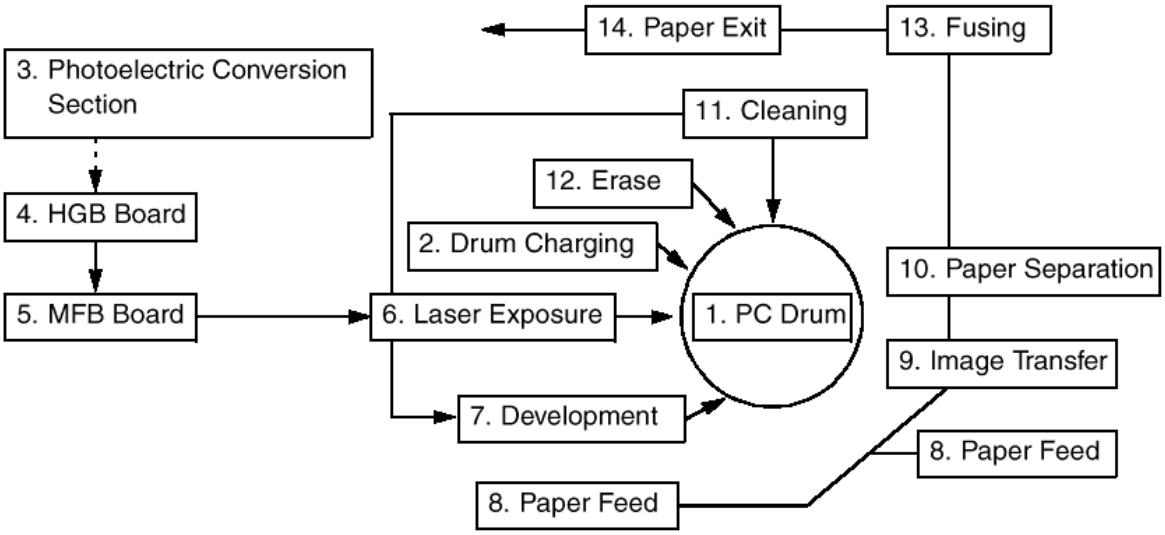
2.4 Recording Section

2.4.1 Cross-sectional view



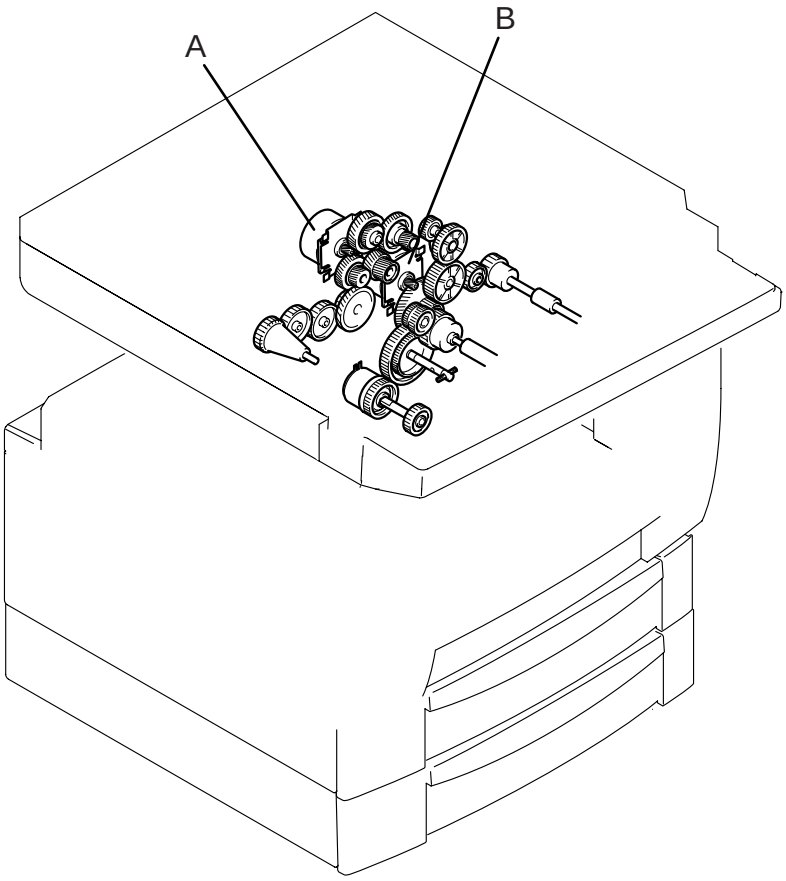
1. 2nd Mirror
2. 3rd Mirror
3. Exposure Lamp
4. 1st Mirror
5. Lens
6. CCD Unit
7. Paper Exit Roller
8. Fusing Roller Thermostat (TS1)
9. Fusing Roller Heater Lamp (H1)
10. Paper Exit Sensor (PC3)
11. Right Fusing Roller
12. Left Fusing Roller
13. Fusing Cooling Fan Motor (M3)
14. Image Transfer Roller
15. Synchronizing Roller
16. Synchronizing Roller Sensor (PC2)
17. Manual Feed Paper Take-Up Sensor (PC8)
18. Manual Feed Paper Take-Up Roll
19. Vertical Transport Roller
20. Paper Separator Pad
21. Paper Take-Up Roll
22. Imaging Cartridge (I/C)
23. PH Unit

2.4.2 Image Processing



1. PC Drum
   - The drum is an aluminum cylinder coated with photosensitive material on which an electrostatic latent image is produced.
2. Drum Charging
   - A scorotron charger employing a comb electrode generates a negative DC charged layer on the surface of the PC Drum.
3. Photoelectric Conversion Section
   - The Exposure Lamp directs light onto the original. The light reflected off the original is directed and resized by the mirrors and lens so as to produce a reduced-size image on the CCD Sensor.
4. HGB Board
   - Converts an electric signal into a corresponding 8-bit digital image signal (A/D conver-sion), makes various corrections, and outputs the results to the MFB Board.
5. MFB Board
   - Compresses the image data received from the HGB Board, stores it, and uncompresses it.
6. Laser Exposure
   - The laser beam emitted from the LD (laser diode) strikes the surface of the PC Drum, creating an electrostatic latent image.
7. Development
   - Negatively charged toner adheres to the latent image on the PC Drum surface, creating a visible image.
8. Paper Feed
   - Feeds sheets of paper from the appropriate paper source.
9. Image Transfer
   - An Image Transfer Roller is used. A positive charge applied to the roller causes the visible image on the surface of the PC Drum to transfer onto the front side of the paper.
10. Paper Separation
    - The PC Drum Separator Fingers remove paper from the surface of the PC Drum.
11. Cleaning
    - The Cleaning Blade scrapes residual toner off the surface of the PC Drum and the toner is recycled back to the Developing Unit.
12. Erase
    - The PC Drum is exposed to light, which effectively removes any residual charge from the drum surface.
13. Fusing
    - Heat and pressure applied by the Right and Left Fusing Rollers fuse toner on the paper.
14. Paper Exit
    - Feeds paper out of the machine.

2.4.3 Drive System

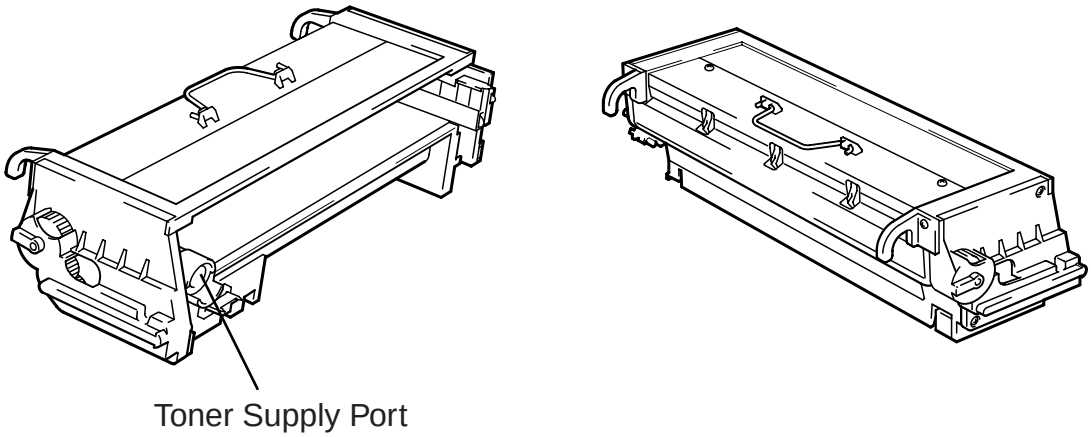


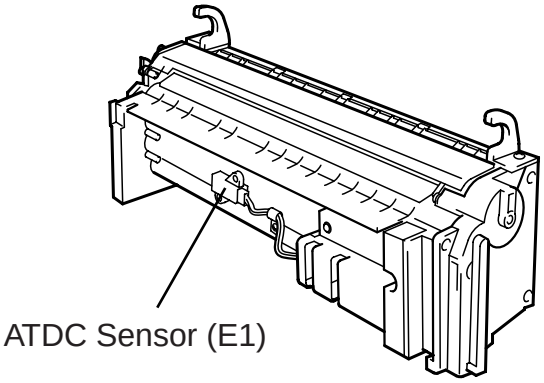
A. I/C Motor (M1)
Drives the I/C Unit (Drum cartridge).

B. Main Motor (M2)
Drives the Paper Take-Up Roll, Manual Feed Paper Take-Up Roll, Synchronizing Roller, Image Transfer Roller, and Fusing Unit.

2.4.4 Imaging Cartridge (I/C)

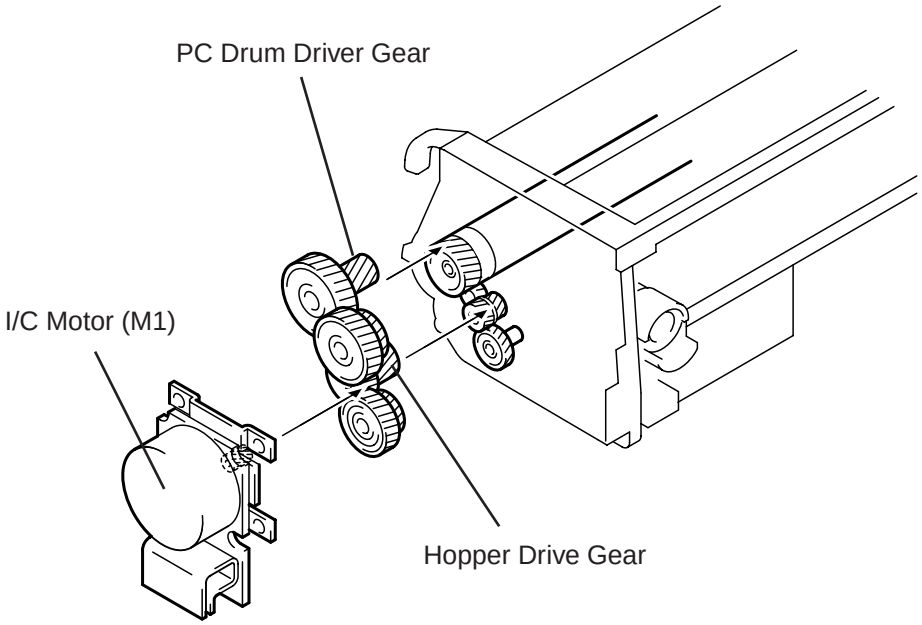
- This machine employs an Imaging Cartridge (“I/C” in this manual) that contains a PC Drum, PC Drum Charge Corona, Developing Unit, and Cleaning Unit as one unit.





2.4.4.1 I/C Drive Mechanism

- Drive from the I/C Motor is transmitted via a gear train to the PC Drum and Hopper.



Electrical Component	Control Signal	ON	OFF
M1	PJ16A-3 See block diagram of the printer.	L	H

2.4.4.2 Identification and Life of I/C

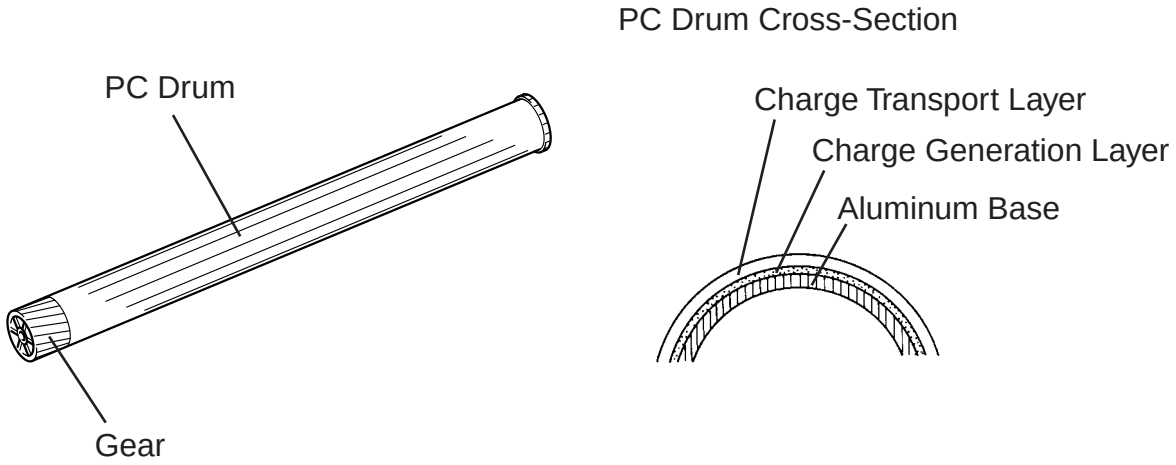
- When the Start key is pressed or the Side Cover is opened and closed, the machine determines whether the I/C is new or one which has been used previously.
- The machine monitors the I/C life by storing in memory the period of time during which the PC Drum has turned. The data is cleared when a new I/C is installed in the machine.

2.4.5 PC Drum

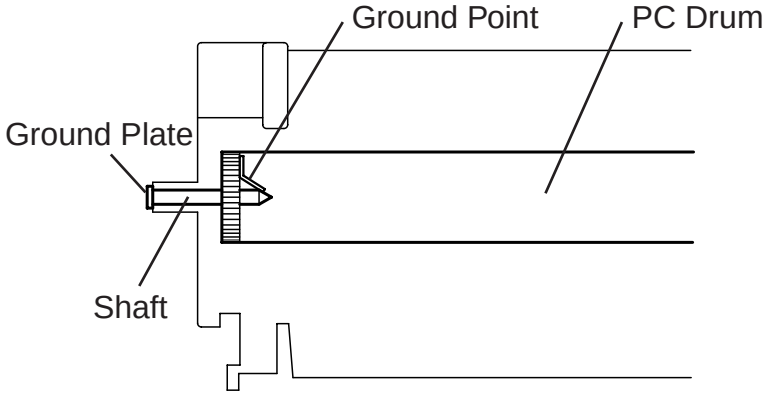
- The PC Drum used in this machine is the organic photoconductor (OPC) type.
  The drum consists of an aluminum base coated with a charge generation layer and a charge transport layer.

Handling Precautions

Prolonged exposure to light can cause the photoconductor surface of the drum to suffer light fatigue, resulting in a loss of photosensitivity. If the I/C is removed from the machine, it should be wrapped in a soft, clean, opaque cloth or other protective covering to prevent exposure to light.

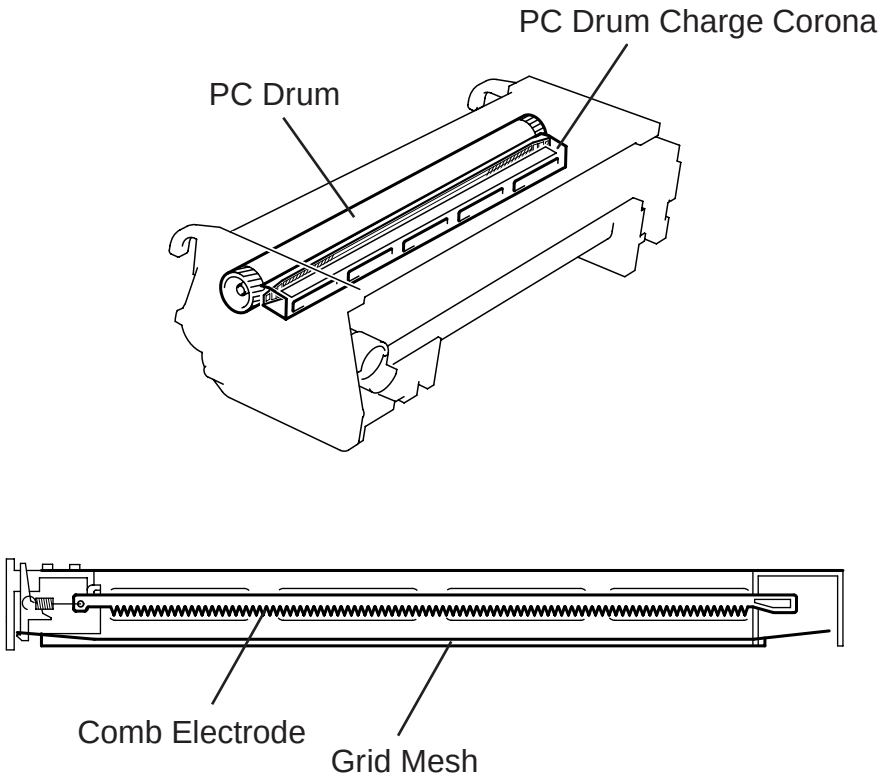


- Grounding of the PC Drum
  The PC Drum ground point is located inside and at the front end of the I/C as viewed from the front of the machine and in constant contact with the Drum Holding Shaft. When the I/C is installed in the machine, the Drum Holding Shaft contacts the ground point. This provides for assured grounding of the PC Drum through the ground plate in the rear to the frame of the machine.



2.4.6 Drum Charging

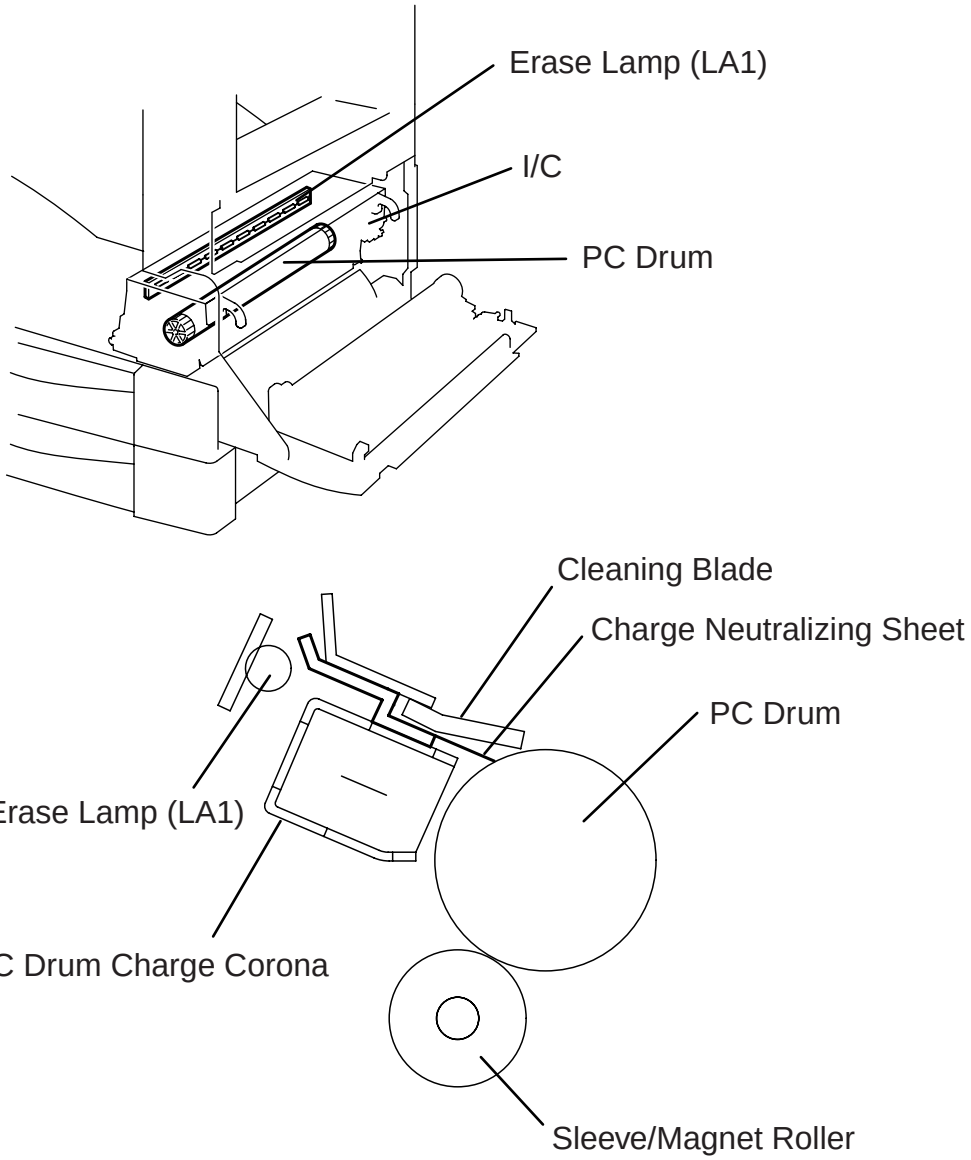
- A scorotron charger system generates a negative DC corona discharge onto the PC Drum surface. The grid mesh ensures uniform charging.
- The grid voltage (Vg) applied to the grid mesh is controlled by the constant voltage circuitry within the High Voltage Unit. It is varied through image stabilization control.
- To restrict ozone production, the machine uses a PC Drum Charge Corona with a comb electrode.



Electrical Component	Control Signal	ON	OFF
Drum charging output	PJ14A-3A See block diagram of the printer.	L	H

2.4.7 Erase Lamp

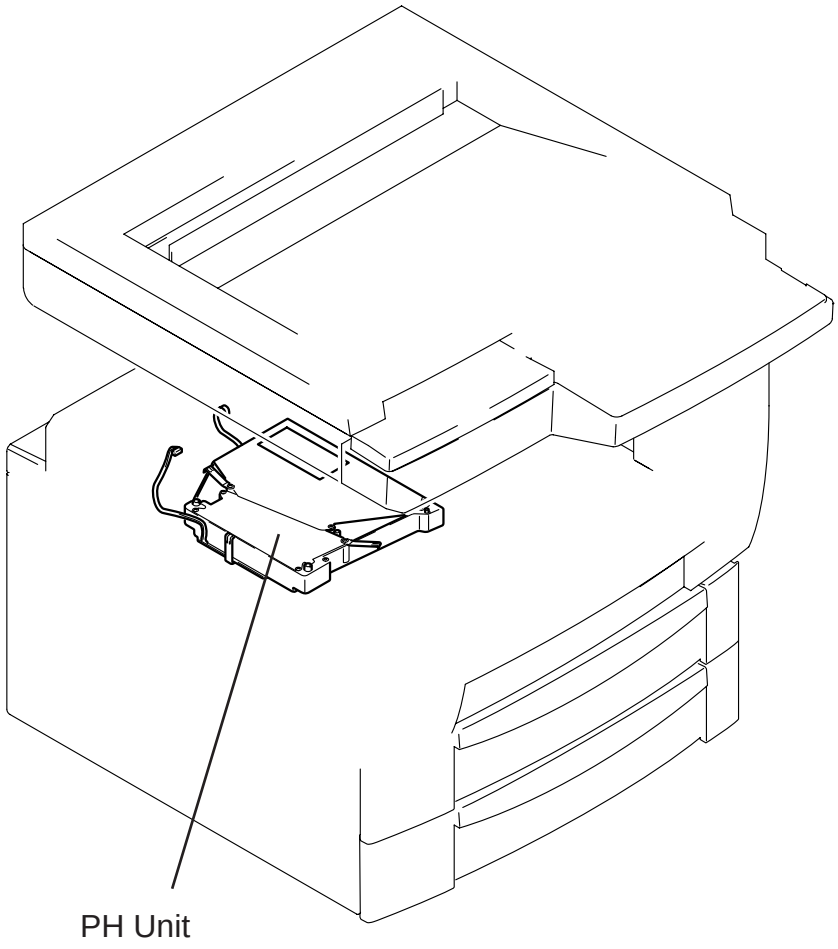
- Any potential remaining on the surface of the PC Drum is neutralized by both light from the Erase Lamp and a DC negative voltage applied by the Charge Neutralizing Sheet.
- The Charge Neutralizing Sheet applies a negative charge on the surface of the PC Drum which is positively charged by the Image Transfer Roller. A voltage of -820V is applied to the Charge Neutralizing Sheet from the High Voltage Unit. The Erase Lamp then illuminates the surface of the PC Drum to further neutralize it.
- The Erase Lamp consists of ten tungsten lamps.



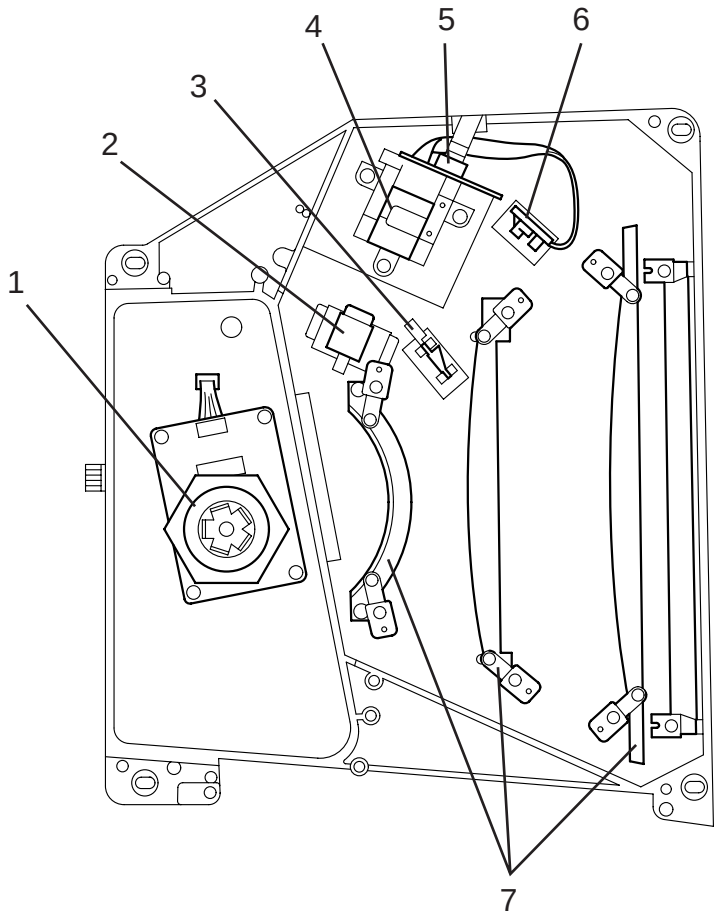
Electrical Component	Control Signal	All lamps ON	Standby ON
LA1	PJ11A-6A See block diagram of the printer.	H	L

2.4.8 PH Section

- Based on the image data output from the MFB Board, the LD (laser diode) is activated and the corresponding light strikes the surface of the PC Drum.



2.4.8.1 PH Components

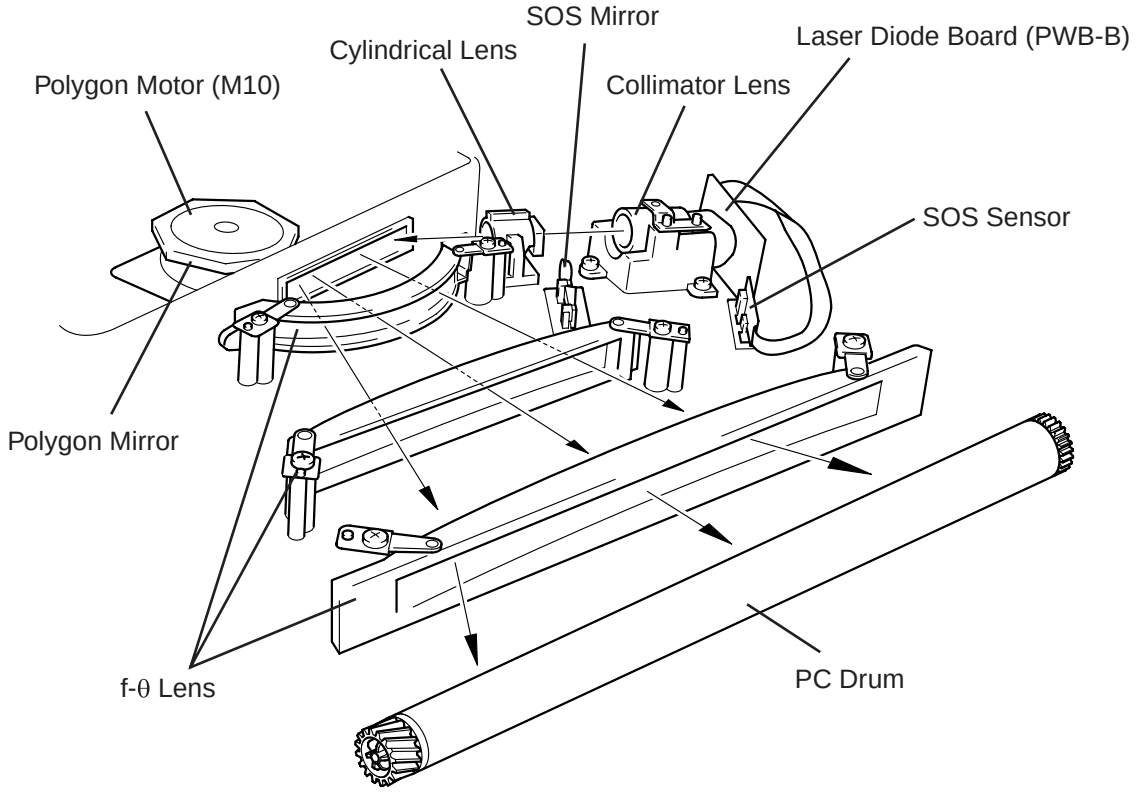


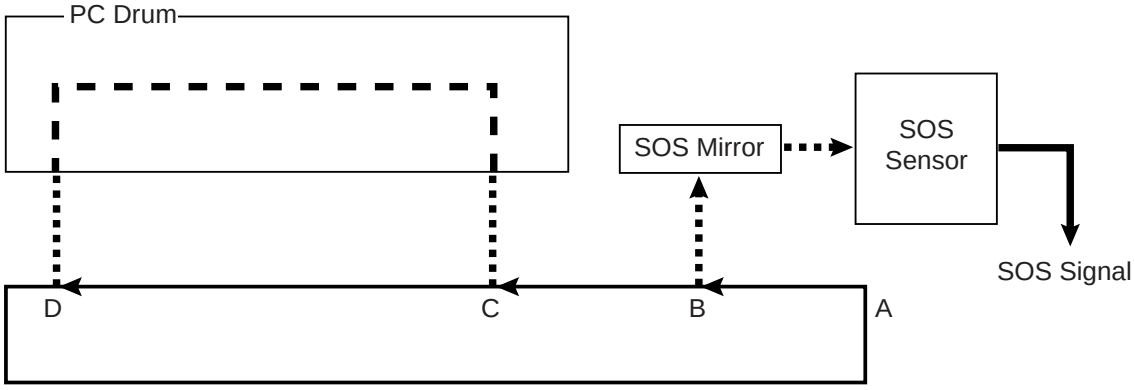
1. Polygon Motor (M10)
2. Cylindrical Lens
3. SOS Mirror
4. Collimator Lens
5. Laser Diode Board (PWB-B)
6. SOS Sensor
7. f-θ Lens

Electrical Component	Control Signal	ON	OFF
M10	PJ8A-3 See block diagram of the printer.	L	H

2.4.8.2 Laser Emission Timing (SOS Signal)

- The signal output from the Master Board triggers the firing of the laser. The laser beam travels to the Polygon Mirror, lens, and SOS Mirror to eventually hit the SOS Sensor, which generates an SOS signal.
- The SOS signal determines the laser emission timing for each line in the main scanning direction.

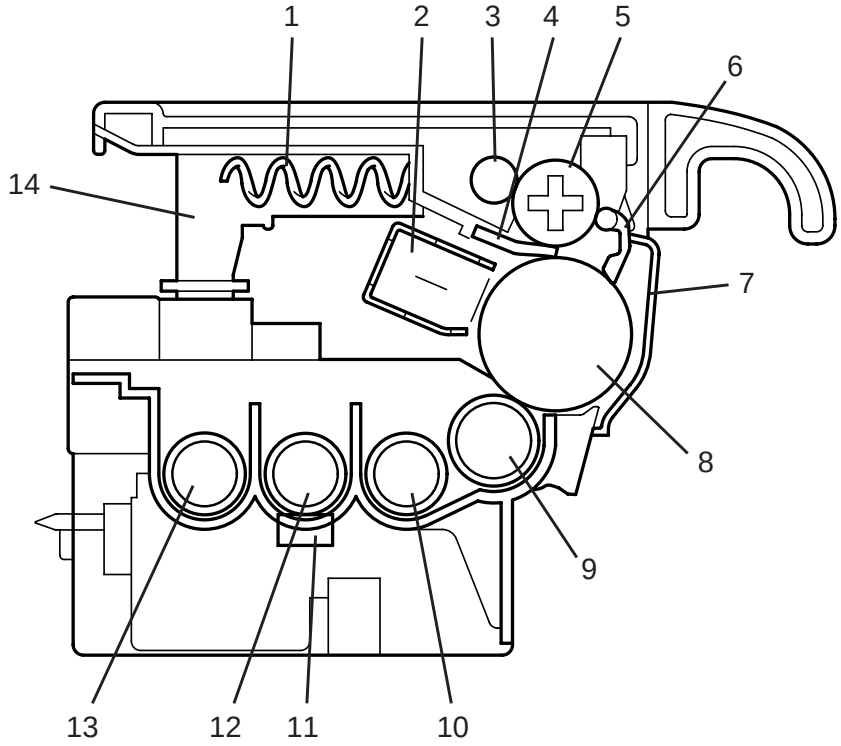




A to B: LD activation
B to C: LD OFF
C to D: Laser beam exposure area according to the image data

2.4.9 DEVELOPING UNIT

• The Toner Conveying Rollers mix the toner and carrier particles together and carry the toner/carrier mixture up to the Sleeve/Magnet Roller. The magnetic brush formed on the surface of the roller allows the toner to come into contact with the charges on the surface of the PC Drum, thus forming an electrostatic latent image.



1. Spent Toner Recycling Coil
2. PC Drum Charge Corona
3. Spent Toner Feed Roller 2
4. Cleaning Blade
5. Spent Toner Feed Roller 1
6. PC Drum Paper Separator Finger
7. PC Drum Protective Shutter
8. PC Drum
9. Sleeve/Magnet Roller
10. 1st Toner Conveying Roller
11. ATDC Sensor (E1)
12. 2nd Toner Conveying Roller
13. 3rd Toner Conveying Roller
14. Spent Toner Recycling Duct

2.4.9.1 Sleeve/Magnet Roller

- This machine employs the MT-HG system with a Sleeve/Magnet Roller having the following magnetic characteristics.
- Turning of the sleeve surrounding the Magnet Roller ensures that fresh developer from the Developer Mixing Chamber is always being conveyed to the point of development with respect to the PC Drum.

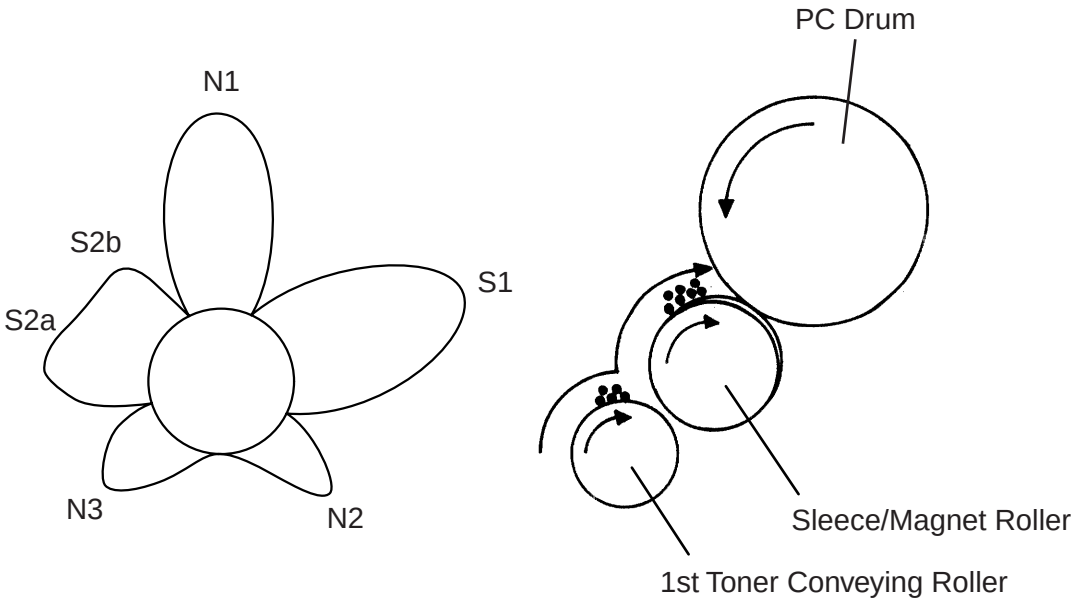
N1 : The point of development with the maximum magnetic flux density which ensures that the carrier is firmly held onto the Sleeve Roller when toner is attracted to the latent image.

S1, N2 : The magnetic flux density between these two poles is made low to ensure that the developer remaining on the surface of the Sleeve Roller is smoothly recycled. They also prevent developer from scattering.

N3 : The developer brush is formed by this pole and its height is moderated before the brush is regulated by the Doctor Blade.

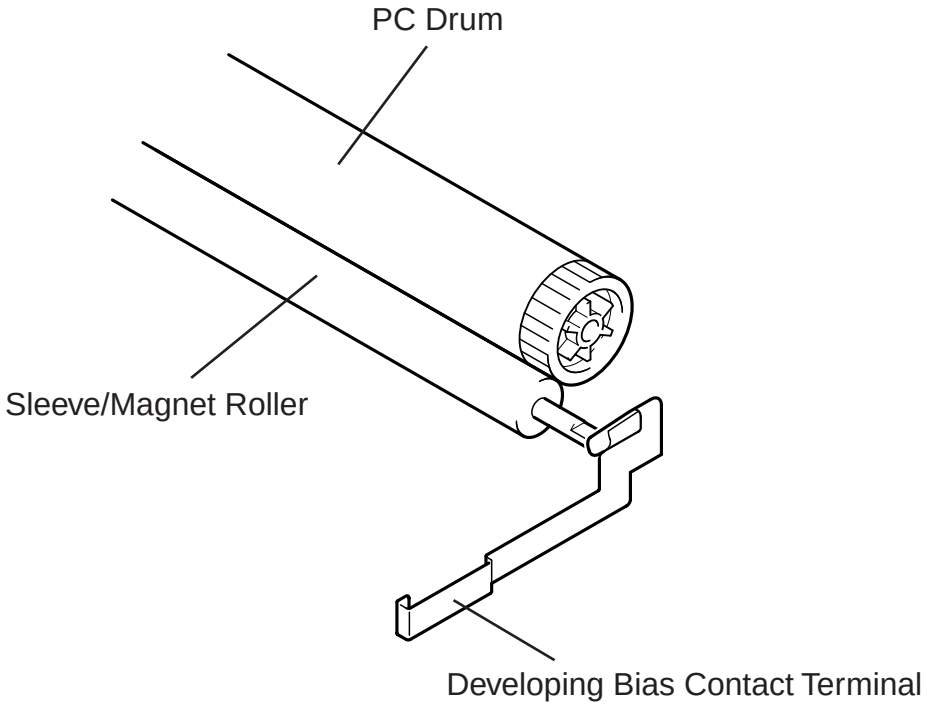
S2a : This pole ensures that the developer is conveyed to the point of development over the wide interval between N3 and N1.

S2b : If developer is compacted and clogs at the Doctor Blade and, as a result, part of the surface of the Sleeve/Magnet Roller is not covered with developer, the nearby developer around this pole with a weak magnetic force goes to those uncovered areas. This helps prevent white lines from occurring on the copy.



2.4.9.2 Developing Bias

- The amount of toner attracted onto the surface of the PC Drum is controlled by varying the developing bias voltage.
- As the PC Drum deteriorates and its photoconductive layer begins to wear, it becomes more sensitive to the increase in the amount of toner. As a countermeasure against this problem, the developing bias voltage is automatically switched according to the PC Drum temperature, thereby stabilizing the image quality level.



Electrical Component	Control Signal	ON	OFF
Vb	PJ14A-1A See block diagram of the printer.	L	H

2.4.9.3 ATDC Sensor

- The ATDC Sensor automatic adjustment is made when a new I/C is installed in the machine. Toner replenishing control is thereafter controlled as detailed in the following.

1. ATDC Sensor Automatic Adjustment

- The ATDC Sensor is automatically adjusted when a new I/C is loaded in the machine. During this sequence, the machine reads the sensor output value and sets it as the reference.
  This reference value is stored in memory and used until the I/C reaches its service life.

2. Toner Replenishing Control

- While the I/C Motor is turning, the ATDC Sensor samples T/C and, according to the readings, the machine provides the following controls.

T/C Ratio (%)	Sampling Data (V)	Control Details
More than 19	Less than 1.41	Defective ATDC Sensor
14 to 19	2.32 to 1.41	Toner replenished for 0 msec.
13 to 14	2.50 to 2.32	Toner replenished for 54 msec. at intervals of approx. 1 sec.
12 to 13	2.68 to 2.50	Toner replenished for 150 msec. at intervals of approx. 1 sec.
10 to 12	3.10 to 2.68	Toner replenished for 378 msec. at intervals of approx. 500 msec.
7 to 10	3.92 to 3.10	Passed onto the T/C recovery mode.
Less than 7	More than 3.92	Defective ATDC Sensor

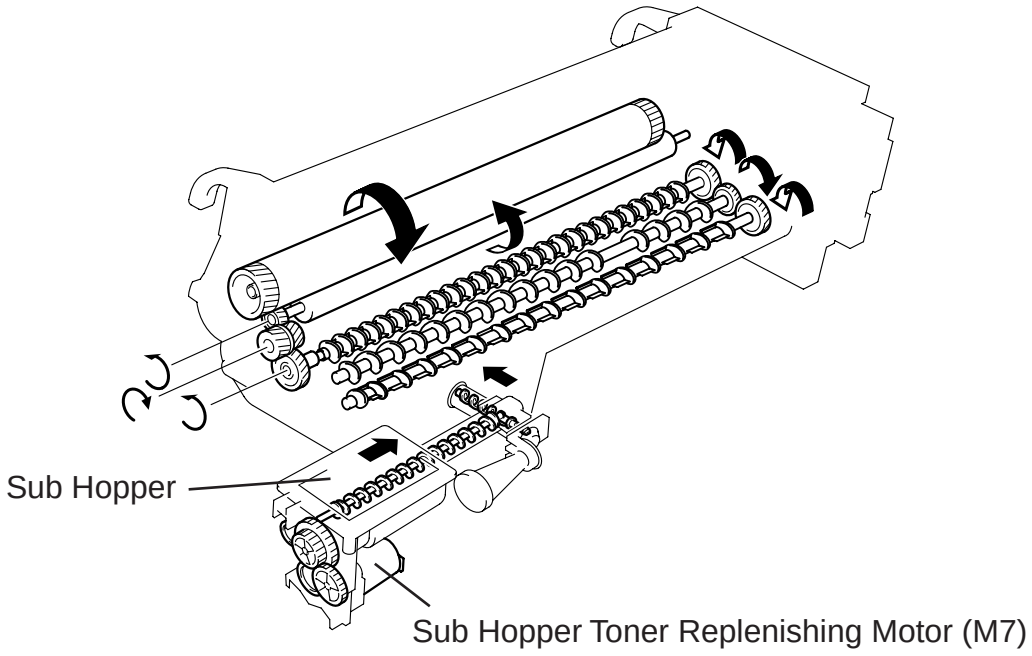
✻ Toner replenishment represents the operation of the Sub Hopper Toner Replenishing Motor.

3. Toner Empty Control (T/C Recovery Mode)

- When the control is passed onto the T/C recovery mode, the Sub Hopper Toner Replenishing Motor is energized to replenish the supply of toner into the Developing Unit and, if T/C is recovered to a level of 14% or higher (2.32V or less) within 150 sec., it resets the toner-empty condition.

2.4.9.4 Sub Hopper Toner Replenishing Mechanism

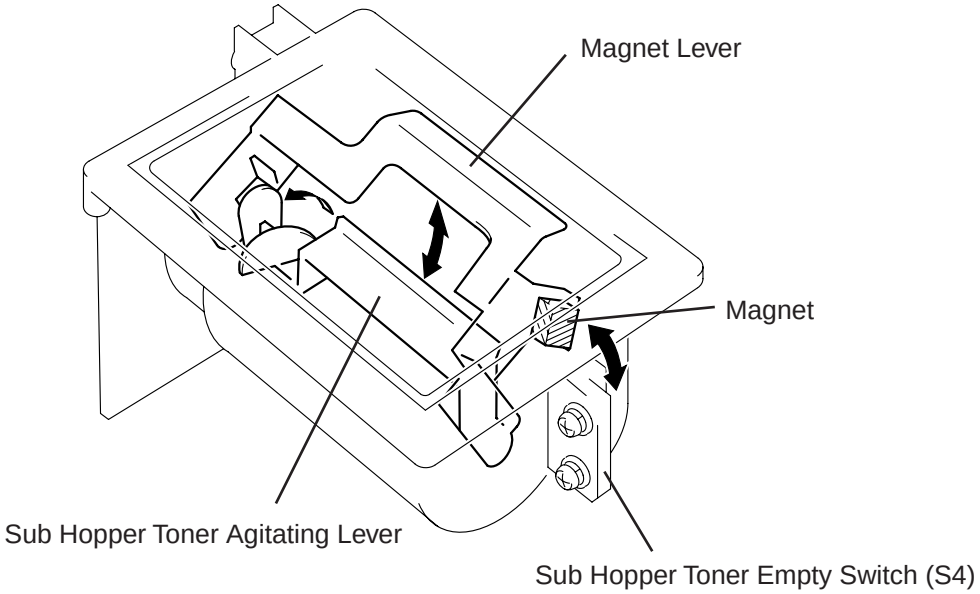
- Toner is replenished from the Sub Hopper to the Developing Unit by turning the Sub Hopper Toner Replenishing Motor for the period of time controlled by the ATDC output voltage (T/C).



Electrical Component	Control Signal	ON	OFF
M7	PJ11A-8A See block diagram of the printer.	DC24V	L

2.4.9.5 Sub Hopper Toner Empty Detecting Mechanism

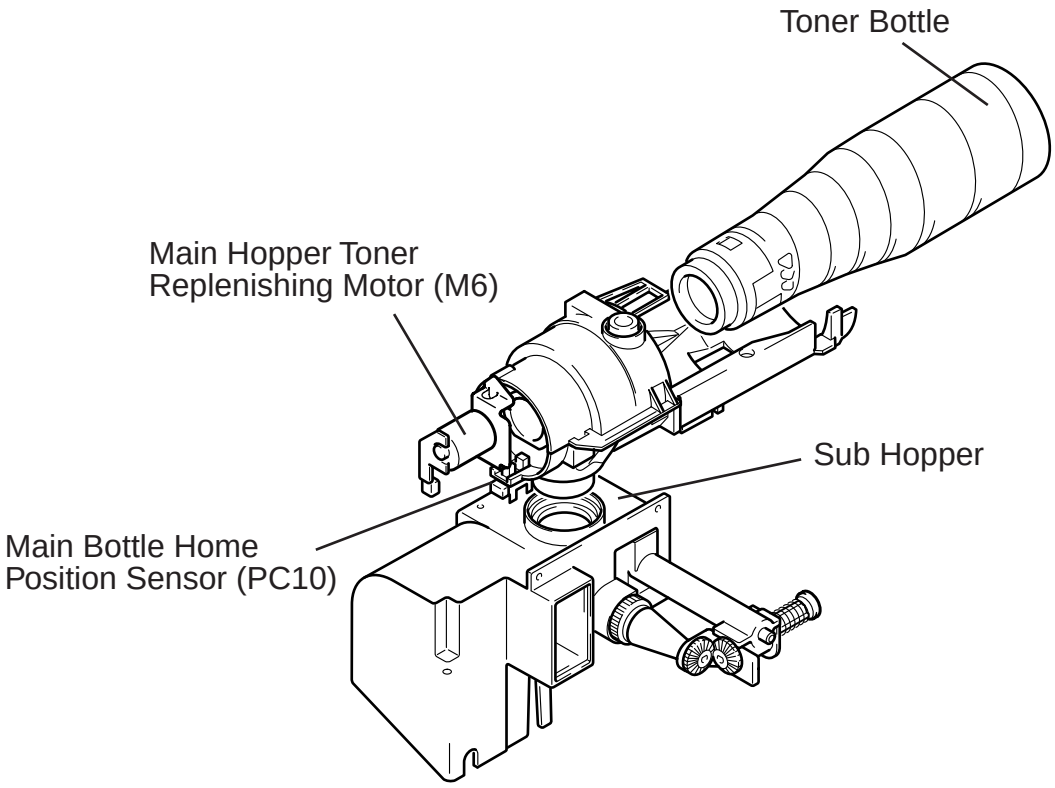
- A toner-empty condition in the Sub Hopper is detected by the Magnet Lever that moves up and down as the Sub Hopper Toner Agitating Lever turns and actuates and de-actuates the Sub Hopper Toner Empty Switch.
- While the amount of toner in the Sub Hopper is more than the predetermined amount, the Magnet Lever rests on the toner, keeping the Sub Hopper Toner Empty Switch de-actuated even when the Sub Hopper Toner Agitating Lever turns. As toner is consumed, the Magnet Lever lowers to eventually actuate the Sub Hopper Toner Empty Switch, at which timing the machine detects a toner-empty condition in the Sub Hopper.



Electrical Component	Control Signal	ON	OFF
S4	PJ11A-7B See block diagram of the printer.	L	H

2.4.9.6 Main Hopper Toner Replenishing Mechanism

- When a toner-empty condition in the Sub Hopper is detected, the Main Hopper Toner Replenishing Motor is energized to turn the Toner Bottle, thereby supplying toner from the Main Hopper to the Sub Hopper.
- The Toner Bottle Home Position Sensor mounted on the coupling ensures that the Toner Supply Port in the Toner Bottle is positioned at the top whenever the bottle is stopped.
- The Toner Bottle Cover Sensor detects whether the Toner Bottle Cover is open. If the cover is open, the machine does not authorize the initiation of a new copy cycle. If the cover is opened during a copy cycle, the machine interrupts the cycle.

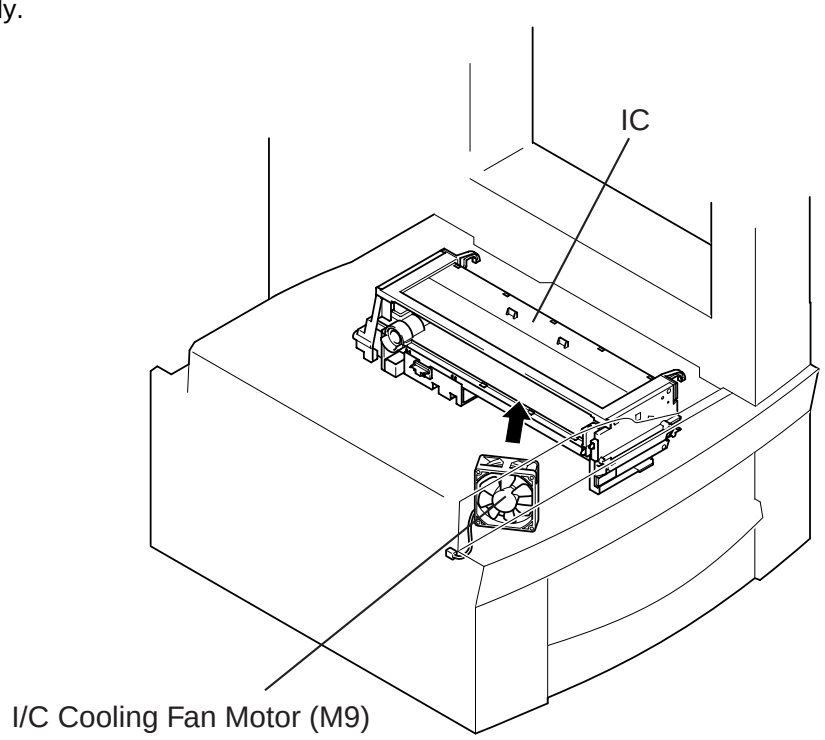


Electrical Component	Control Signal	ON	OFF
M6	PJ11A-4A See block diagram of the printer.	DC24V	L

Electrical Component	Control Signal	Unblocked	Blocked
PC10	PJ11A-2B See block diagram of the printer.	L	H

2.4.9.7 I/C Cooling Fan Motor

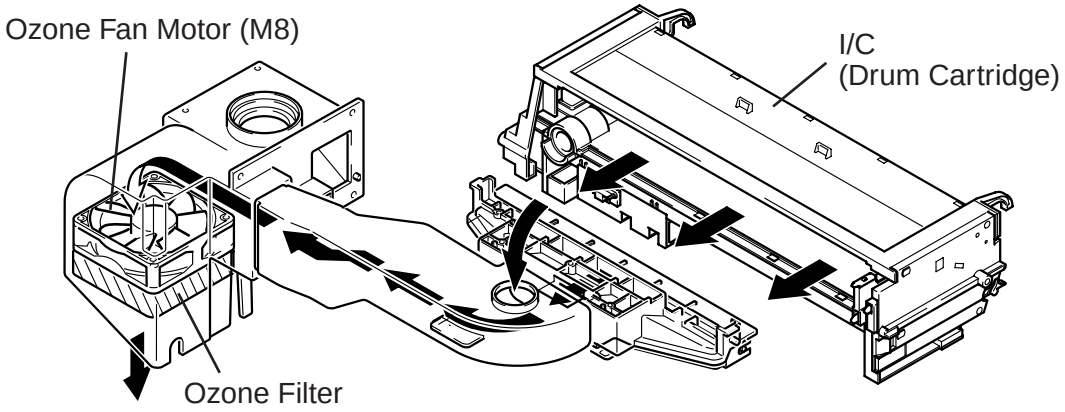
- The I/C Cooling Fan Motor prevents the temperature inside the machine (around the entire I/C) from rising inordinately.



Electrical Component	Control Signal	ON	OFF
M9	PJ18A-10 See block diagram of the printer.	DC24V	L

2.4.9.8 Ozone Fan Motor

- Ozone produced by the PC Drum Charge Corona is absorbed by the Ozone Filter from the air being drawn out of the machine by the Ozone Fan Motor.

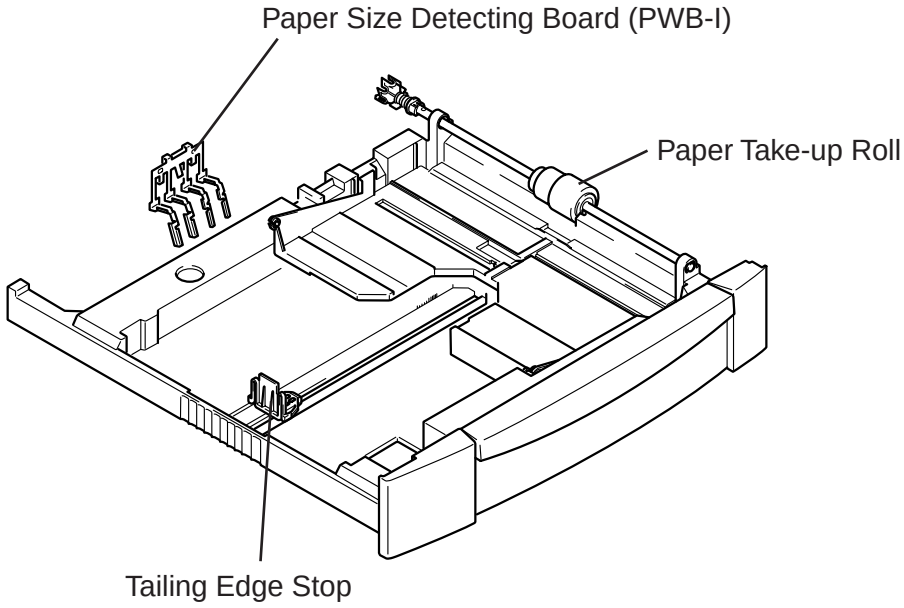


Electrical Component	Control Signal	ON	OFF
M8	PJ11A-1A See block diagram of the printer.	DC24V	L

2.4.10 PAPER TAKE-UP/FEED SECTION

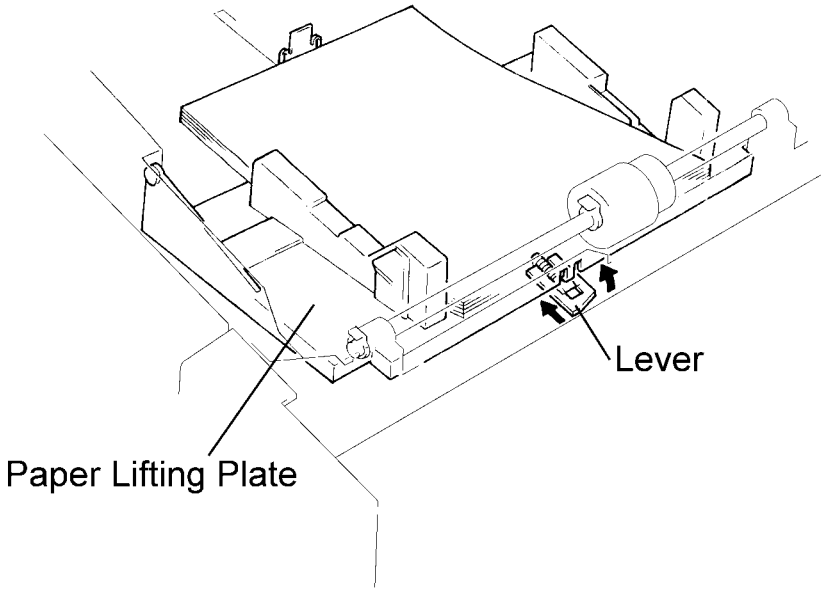
Note: For the details of the paper feed cassette (500-Sheet Cassette), see the Section 6 on this service manual.

- This machine employs the Multi-Purpose (MP) Cassette whose capacity is about 250 sheets (about 20 sheets for special paper).



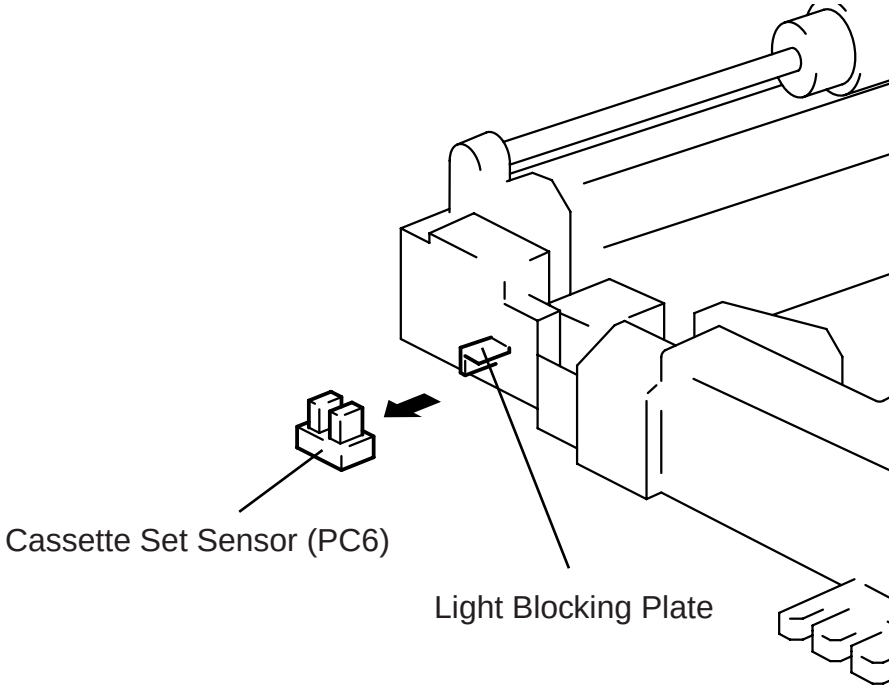
2.4.10.1 MP Cassette Paper Lifting Plate

- The Paper Lifting Plate installed in the MP Cassette is spring-loaded to push the paper stack upward. When the cassette is slid into the machine, the lever located on the bottom of the cassette and used to lock down the Paper Lifting Plate is pushed and unlocked, allowing the Paper Lifting Plate to push the paper stack upward.



2.4.10.2 MP Cassette-in-Position Detection

- When the MP Cassette is slid into the machine, the light blocking plate located in the rear of the cassette blocks the Cassette Set Sensor and the machine determines that the MP Cassette has been slid into position.



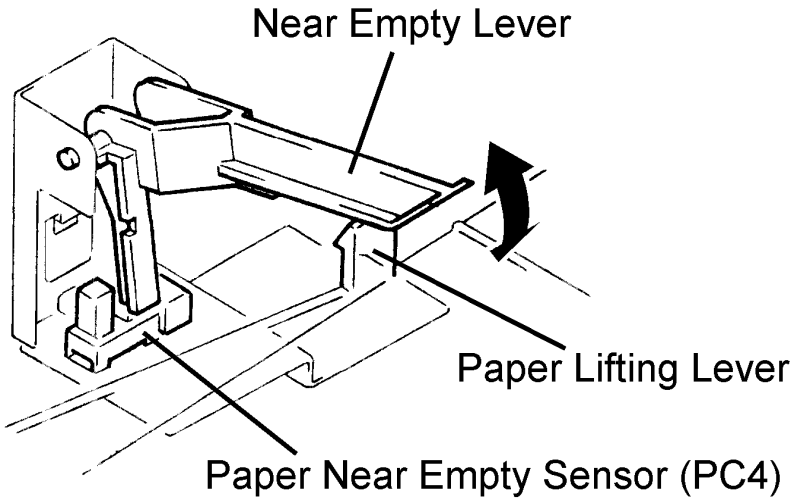
Electrical Component	Control Signal	Unblocked	Blocked
PC6	PJ13A-5B See block diagram of the printer.	H	L

2.4.10.3 MP Cassette Paper Empty Detection

- Two sensors are used in this machine: the Paper Empty Sensor detects a paper-empty condition, while the Paper Near-Empty Sensor detects a paper near-empty condition.

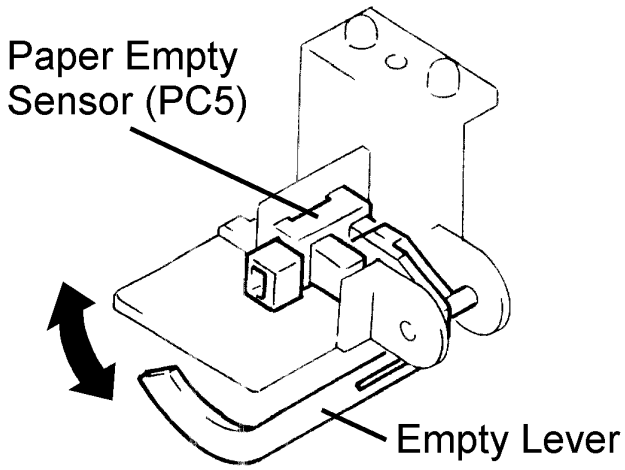
Paper Near-Empty Detection:

- A paper near-empty condition is detected as the paper is consumed and when the Near-Empty Lever lowers to eventually block the sensor (L).
- At this time, the MP Cassette Paper Empty LED starts blinking.
- A paper-empty condition results when about 50 more sheets of paper are used after the near-empty condition has been detected.



Paper Empty Detection:

- A paper-empty condition is detected as the paper is consumed and when the Empty Lever lowers to eventually block the sensor (L).
- At this time, the MP Cassette Paper Empty LED lights up steadily.

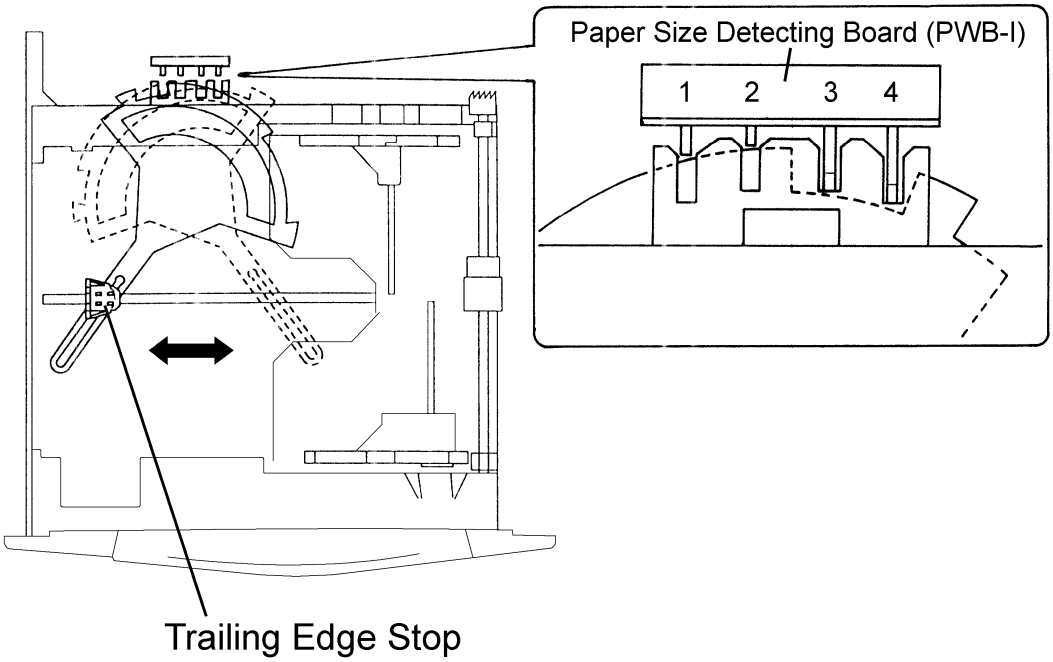


Electrical Component	Control Signal	Unblocked	Blocked
PC4	PJ14A-13A See block diagram of the printer.	H	L
PC5	PJ13A-2B See block diagram of the printer.	H	L

2.4.10.4 MP Cassette Paper Size Detection

- The Paper Size Detecting Board detects the length of the paper (FD).
- A lever is connected to the Trailing Edge Stop of the cassette and, as the stop is slid to the size of the paper loaded in the cassette, the lever is moved to turn ON and OFF the size detecting switches mounted on the machine side.
- The control panel settings are necessary for any paper size other than the following.

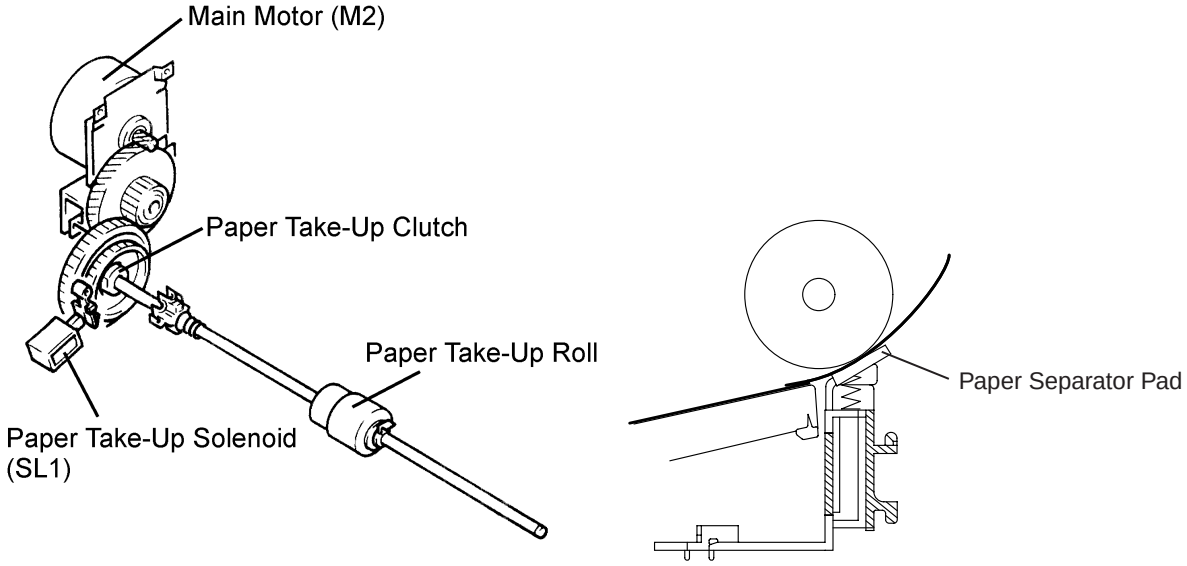
Paper Size Detecting Switches (PWB-I)				Paper Size
1	2	3	4	
ON	OFF	OFF	OFF	A3L, 11×17L
OFF	OFF	OFF	OFF	B4L, 8.5×14L
OFF	ON	ON	ON	A4L
ON	ON	ON	ON	B5L, 8.5×11L
ON	ON	OFF	OFF	A4C/A5L
ON	OFF	OFF	ON	B5C
OFF	ON	OFF	OFF	A5C
ON	ON	ON	OFF	8.5×11C



Electrical Component	Control Signal	ON	OFF
PWB-I (1)	PJ14A-1B See block diagram of the printer.	L	H
PWB-I (2)	PJ14A-2B See block diagram of the printer.	L	H
PWB-I (3)	PJ14A-3B See block diagram of the printer.	L	H
PWB-I (4)	PJ14A-4B See block diagram of the printer.	L	H

2.4.10.5 Paper Take-Up Mechanism

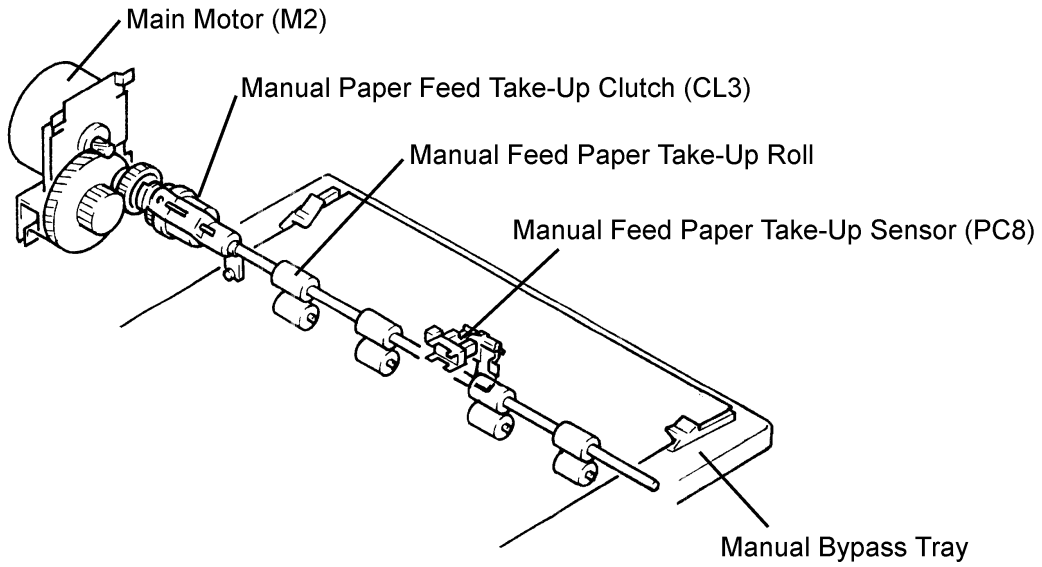
- Drive from the Main Motor is transmitted to the Paper Take-Up Clutch (spring clutch) and, by energizing the Paper Take-Up Solenoid, the Paper Take-Up Roll is turned.
- The paper separating mechanism employs a Paper Separator Pad.



2.4.10.6 Manual Bypass Tray (Option)

1. Construction of the Manual Bypass Tray

- Drive from the Main Motor is transmitted to the Manual Paper Feed Take-Up Clutch and, by energizing this clutch, the Manual Feed Paper Take-Up Roll is turned.

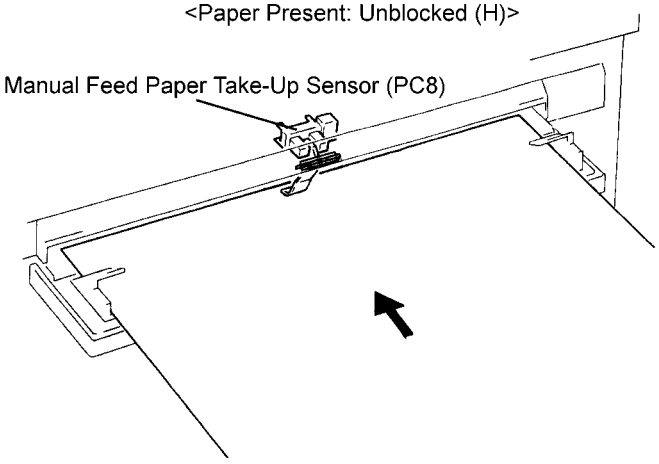

Main Motor (M2)
Manual Paper Feed Take-Up Clutch (CL3)
Manual Feed Paper Take-Up Roll
Manual Feed Paper Take-Up Sensor (PC8)
Manual Bypass Tray

Electrical Component	Control Signal	ON	OFF
M2	PJ16A-1 See block diagram of printer.	L	H
SL1	PJ13A-13B See block diagram of printer.	L	H
CL3	PJ4A-9A See block diagram of printer.	L	H

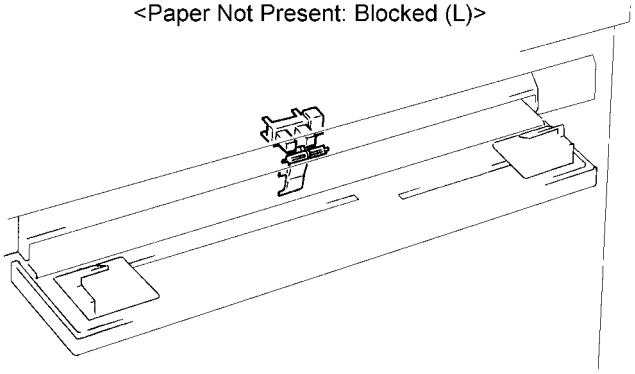
2. Manual Feed Paper Take-Up Detection

- The Manual Feed Paper Take-Up Sensor detects a sheet of paper that is fed via the Manual Bypass Tray.
- The size and type of the paper for manual feed are set on the control panel.

<Paper Present: Unblocked (H)>



<Paper Not Present: Blocked (L)>



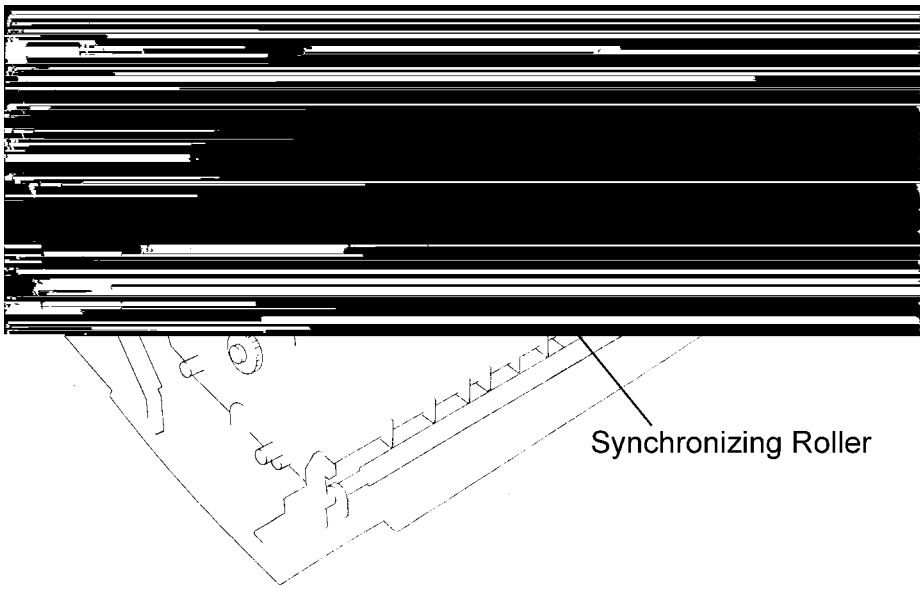
Electrical Component	Control Signal	Unblocked	Blocked
PC8	PJ4A-7B	H	L

2.4.10.7 Paper Take-Up Retry Mechanism

- To minimize the occurrence of a paper misfeed due to a slippery Paper Take-Up Roll, the Paper Take-Up Solenoid is energized a second time if a sheet of paper fails to reach the Synchronizing Roller Sensor within a given period of time after the solenoid has been energized first.
- A paper take-up misfeed results if the sheet of paper does not reach the Synchronizing Roller Sensor even after two paper take-up sequences.

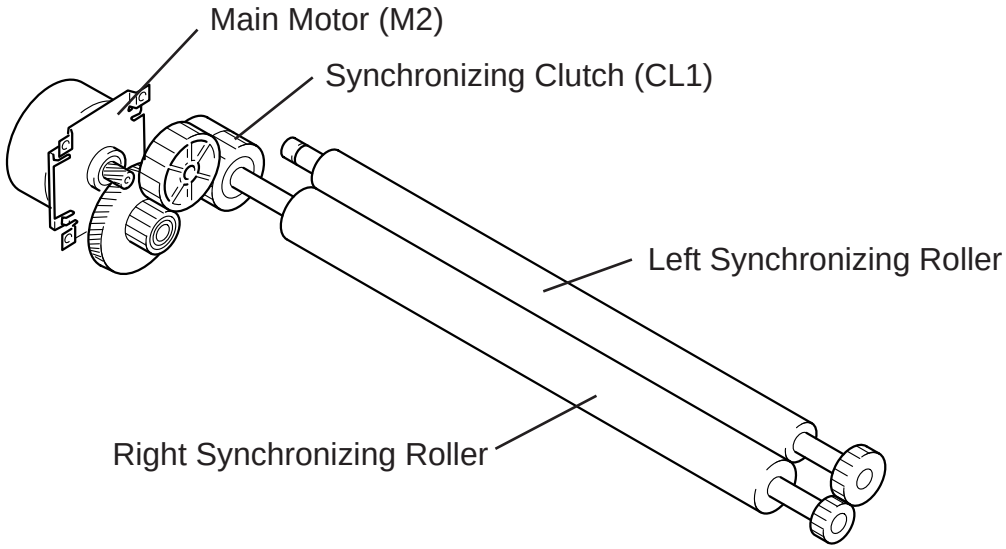
2.4.11 SYNCHRONIZING ROLLERS

- The Synchronizing Rollers of this machine are located inside the Right Door. They are easily accessible for misfeed clearing by just opening the Right Door.



2.4.11.1 Synchronizing Roller Drive Mechanism/Control

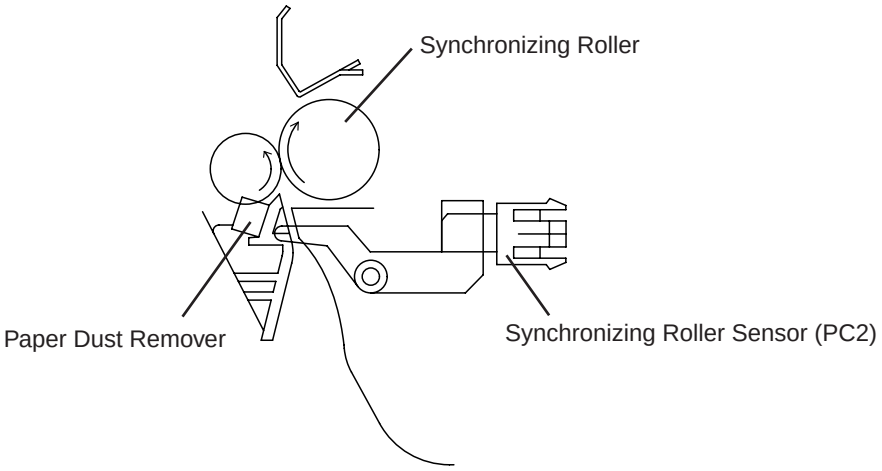
- The Synchronizing Rollers are turned by the drive from the Main Motor transmitted to the Synchronizing Clutch.
- The rollers are started when the Synchronizing Clutch is deenergized.



Electrical Component	Control Signal	ON	OFF
M2	PJ16A-1 See block diagram of the printer.	L	H
CL1	PJ13A-2A See block diagram of the printer.	L	H

2.4.11.2 Paper Dust Remover

- The Paper Dust Remover is installed so that it makes contact with the Left Synchronizing Roller. It is intended for preventing paper dust from sticking to the surface of the PC Drum.
- As the roller turns in contact with the Paper Dust Remover, triboelectric charging occurs, which attracts paper dust from the paper that passes between the two rollers and the dust is, in turn, transferred onto the Paper Dust Remover.



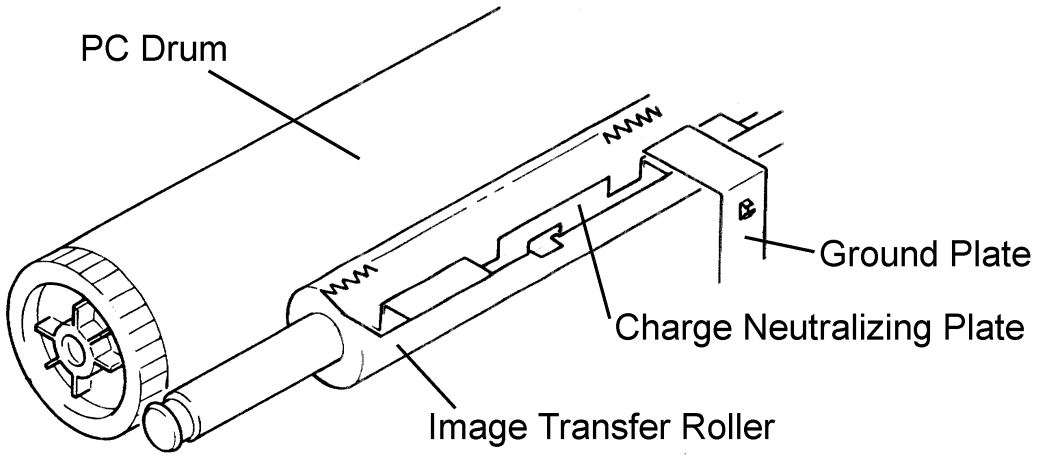
2.4.12 IMAGE TRANSFER AND PAPER SEPARATION

Image Transfer

- This machine employs an Image Transfer Roller to transfer the image to the paper. The High Voltage Unit applies an image transfer current to this roller. To ensure that image transfer efficiency is stabilized, the image transfer current is automatically varied according to the paper size, paper type, and the B/W ratio of the original.
- To prevent toner from sticking to the Image Transfer Roller, an image transfer voltage of -975V is applied to the roller for cleaning.

Paper Separation

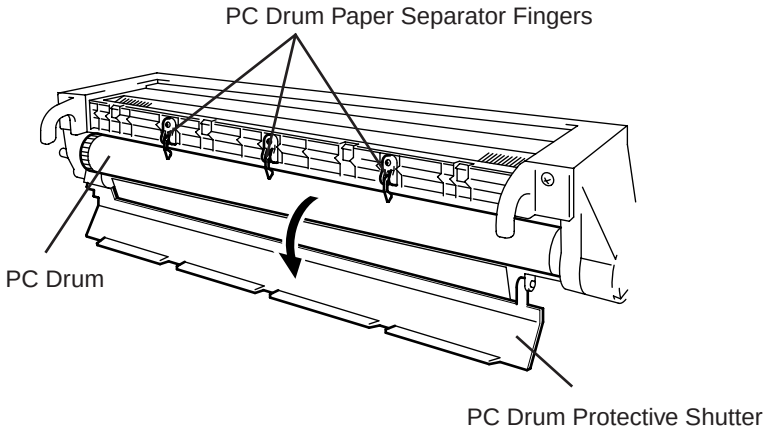
- To neutralize any charge left on the paper, to which the image has been transferred, the High Voltage Unit applies a voltage of -1200V via a ground plate to the Charge Neutralizing Plate.

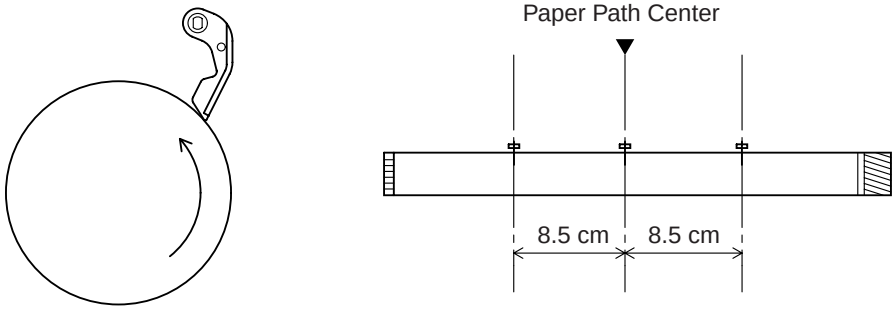


Electrical Component	Control Signal	ON	OFF
Image transfer output	PJ14A-2A See block diagram of printer.	L	H

2.4.13 PC DRUM PAPER SEPARATOR FINGERS

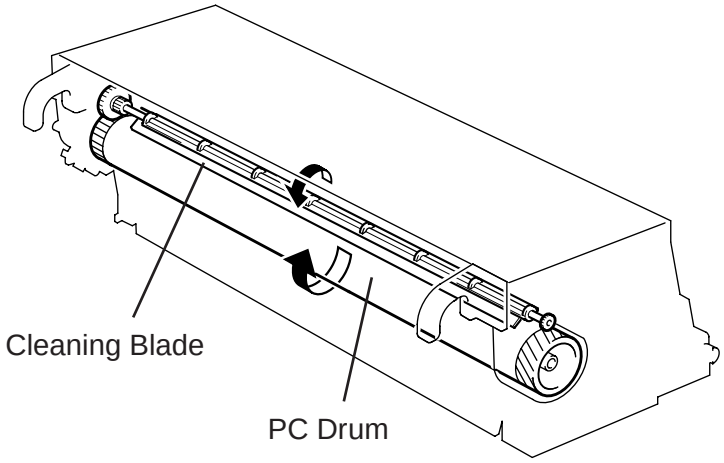
- The three PC Drum Paper Separator Fingers fitted to the I/C mechanically separate paper from the surface of the PC Drum to ensure good and positive paper separation.

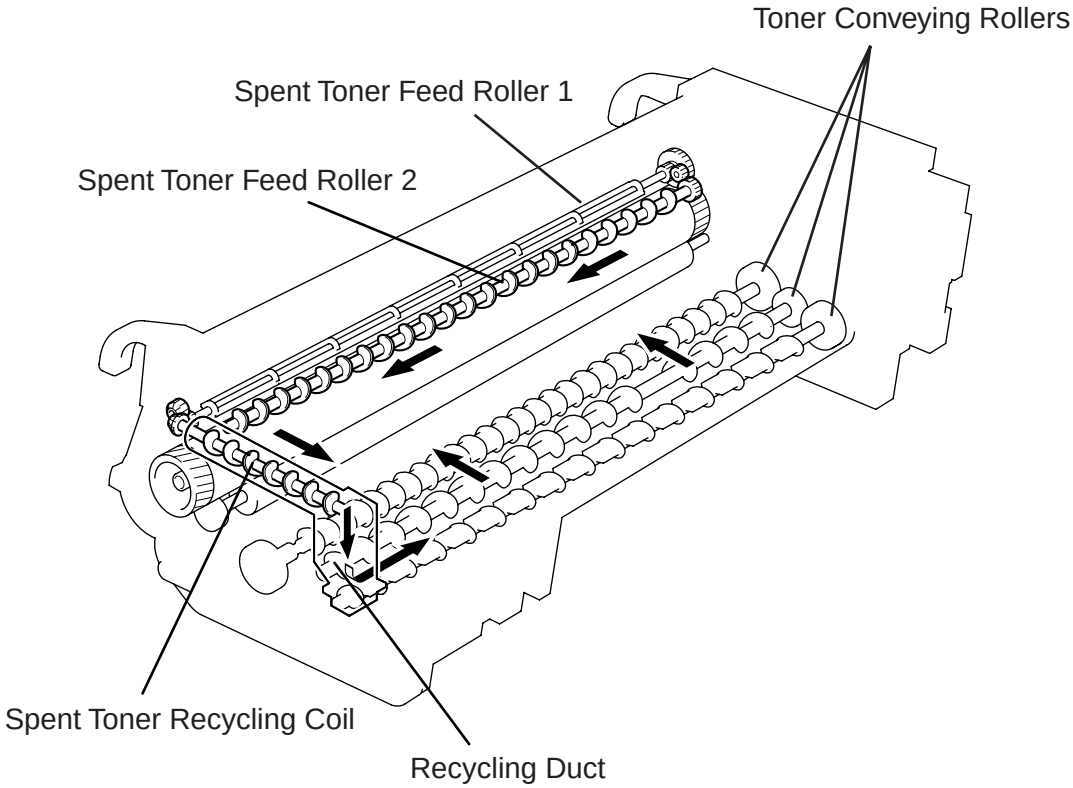




2.4.14 PC DRUM CLEANING

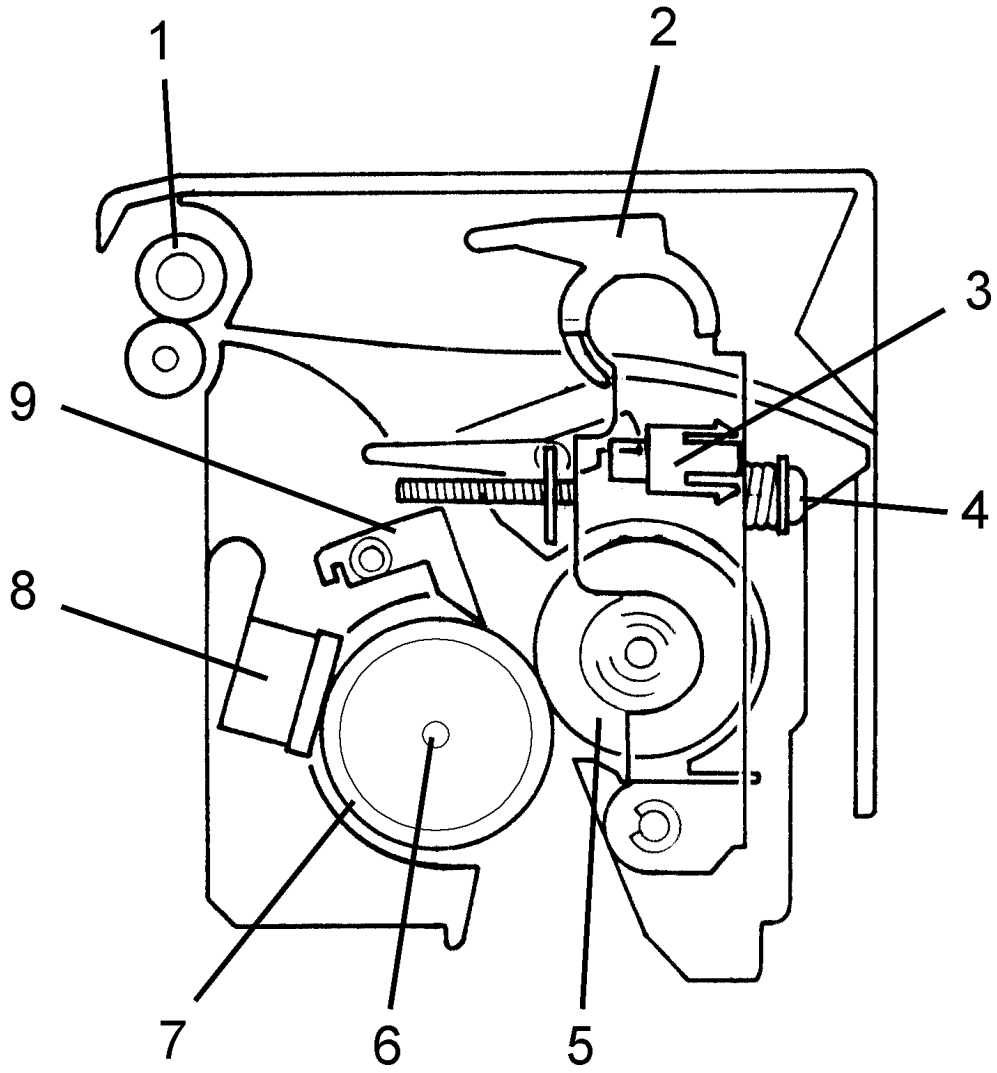
- This machine employs a spent toner recycling mechanism. The Cleaning Blade which is held pressed against the surface of the PC Drum scrapes residual toner off the surface.
  The waste toner is conveyed by Spent Toner Feed Roller 1 and 2 to the Spent Toner Recycling Duct and eventually back to the Developer Mixing Chamber.





2.4.15 FUSING UNIT

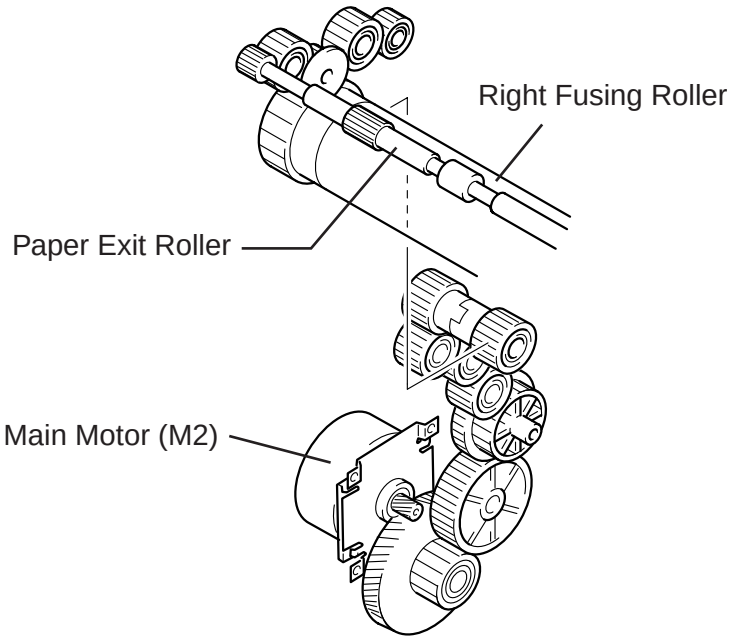
- The paper, to which the developed image is yet to be fixed, is fed through heated Left and Right Fusing Rollers. The heat and pressure applied at this time fixes the image permanently to the paper.



1. Paper Exit Roller
2. Fusing Misfeed Clearing Lever
3. Paper Exit Sensor (PC3)
4. Pressure Spring
5. Right Fusing Roller
6. Fusing Roller Heater Lamp (H1)
7. Left Fusing Roller
8. Fusing Roller Thermostat (TS1)
9. Fusing Paper Separator Finger

2.4.15.1 Drive Mechanism

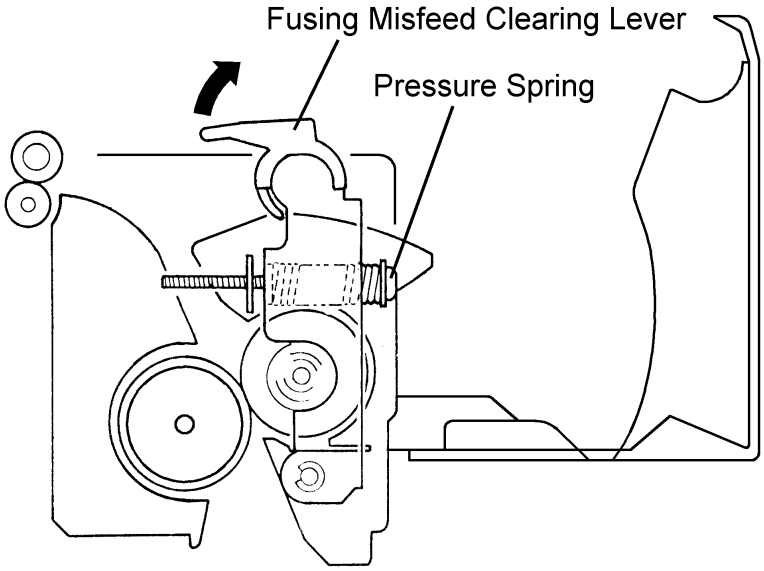
- Drive from the Main Motor is transmitted via a gear train to the Right Fusing Roller.



Electrical Component	Control Signal	ON	OFF
M2	PJ16A-1 See block diagram of printer.	L	H

2.4.15.2 Fusing Rollers Pressure Mechanism

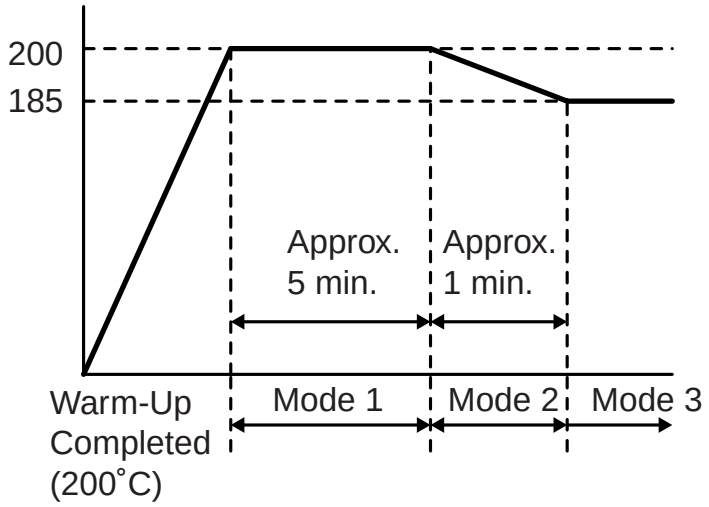
- To ensure that there is a certain width of area of contact between the Left and Right Fusing Rollers, pressure springs are installed.
- The rollers are held pressed against each other at all times and they are released only when servicing the machine or replacing parts.
- The pressure between the two rollers is approx. 12 kg.
- The rollers can be released by moving the Fusing Misfeed Clearing Lever in the direction of the arrow.



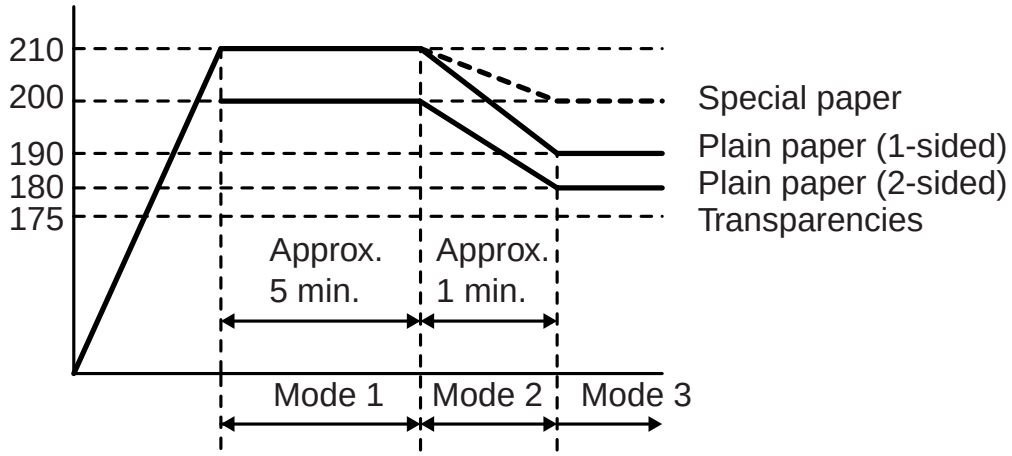
2.4.15.3 Fusing Temperature Control

- The Fusing Roller Heater Lamp inside the Left Fusing Roller provides the following temperature control.

- Temperature Control During Standby State -



- Temperature Control During a Copy Cycle -



<Temperature Control>

- The Fusing Roller Thermistor detects the surface temperature of the Left Fusing Roller. It provides an analog voltage input to the Master Board allowing the machine to control the fusing temperature.

Electrical Component	Control Signal	ON	OFF
H1	PJ16A-8 See block diagram of the printer.	L	H

Electrical Component	Control Signal	Low Temp. ↔ High Temp.
TH1	PJ16A-5 See block diagram of the printer.	Analog input

<Temperature Control by Mode>

- The mode that is initiated following the completion of a warm-up cycle varies as detailed below depending on the machine condition and the Fusing Roller temperature at the restart of temperature control.

Machine Condition	Fusing Roller Temperature	
	Less than 100°C	100°C or higher
Power is turned ON.	Mode 1	Mode 2
Temperature control is interrupted during warm-up.		Mode 1
Temperature control is interrupted during mode 1.		
Temperature control is interrupted during mode 2.		Mode 2
Temperature control is interrupted during mode 3.		

2.4.15.4 CPM Control

- As a measure to prevent the temperature on the edges of the Fusing Rollers (over which no part of paper passes) from rising in a multi-copy cycle using small size paper (width of 250 mm or less), the paper feed interval is made greater.

<Control>

- If a sheet of small size paper is taken up and fed in during mode 1, control is switched to mode 2.
- The number of sheets of small size paper that are fed through is counted.

<Timing>

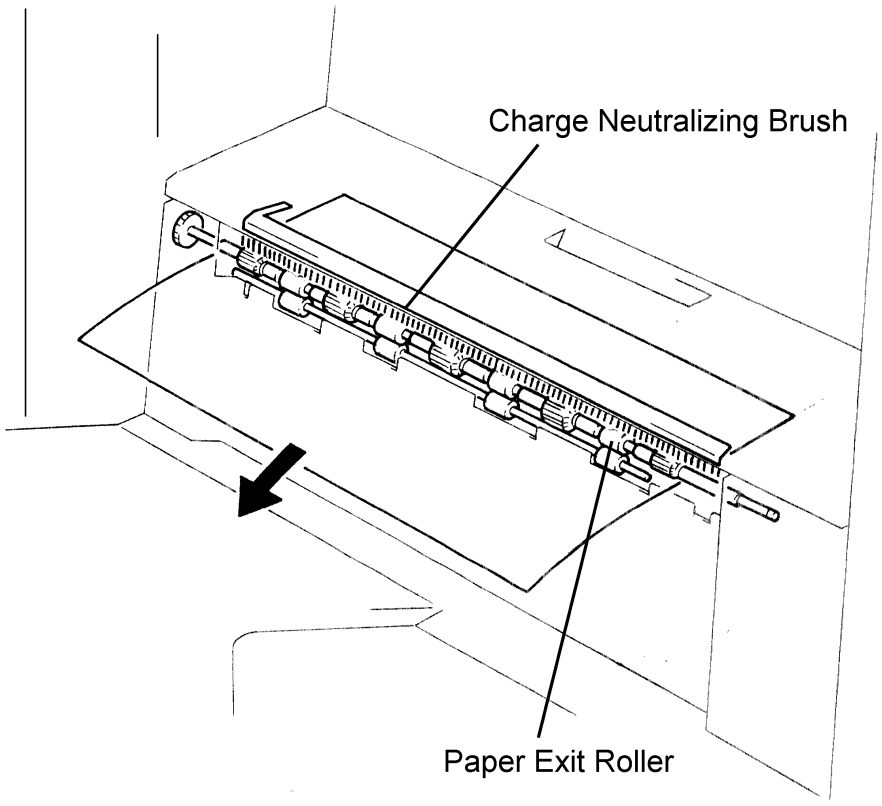
- The counter reaches 30.
- The plain/special paper counter reaches N specified below:
  If the control is in mode 1 or mode 2 when the counter starts counting, N = 30.
  If the control is in mode 3 when the counter starts counting, N = 100.

<Resetting>

- If a period of 2 min. or more elapses, during which the counter does not count up after the counter has started counting, the counter is cleared resetting the CPM control.

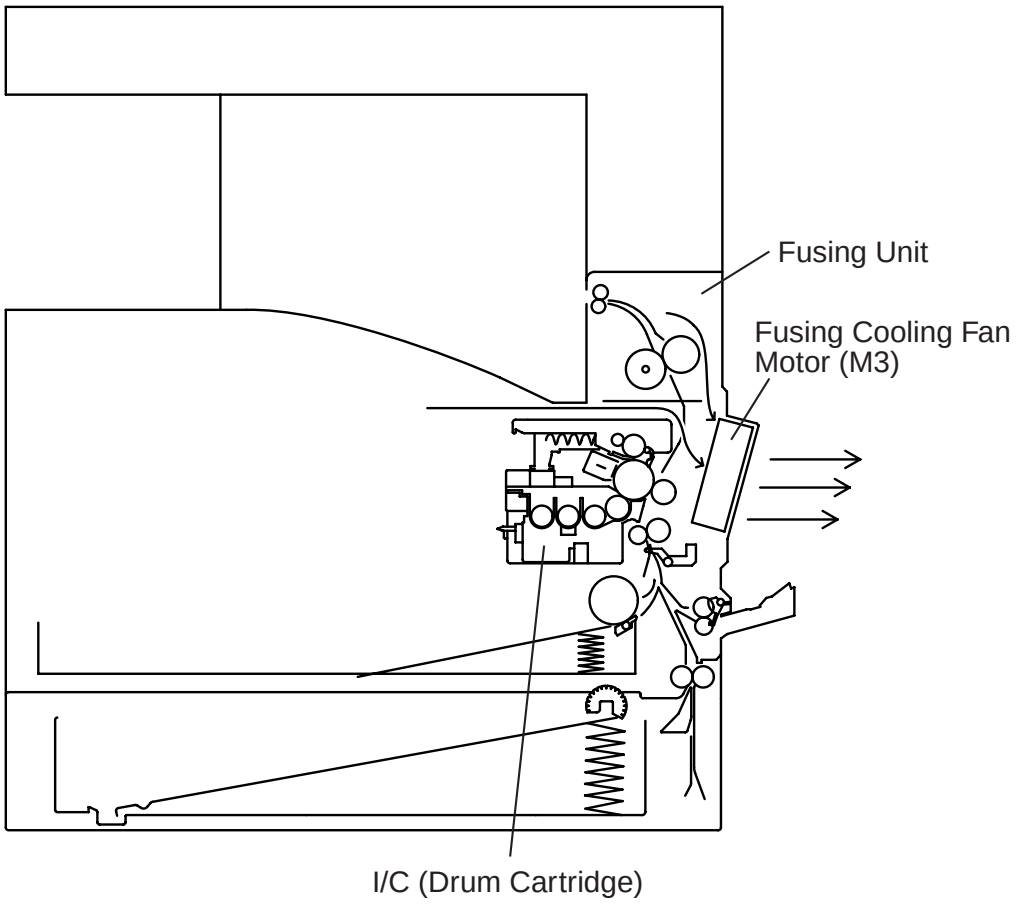
2.4.16 PAPER EXIT UNIT

- The Paper Exit Roller feeds the paper, to which the developed image has been fixed, out of the machine. The Charge Neutralizing Brush touches the surface of the sheet of paper being fed out of the Fusing Unit to neutralize any static charge left on it. This effectively prevents two sheets of paper fed out of the machine from sticking to each other due to static charge.



2.4.17 FUSING COOLING FAN MOTOR

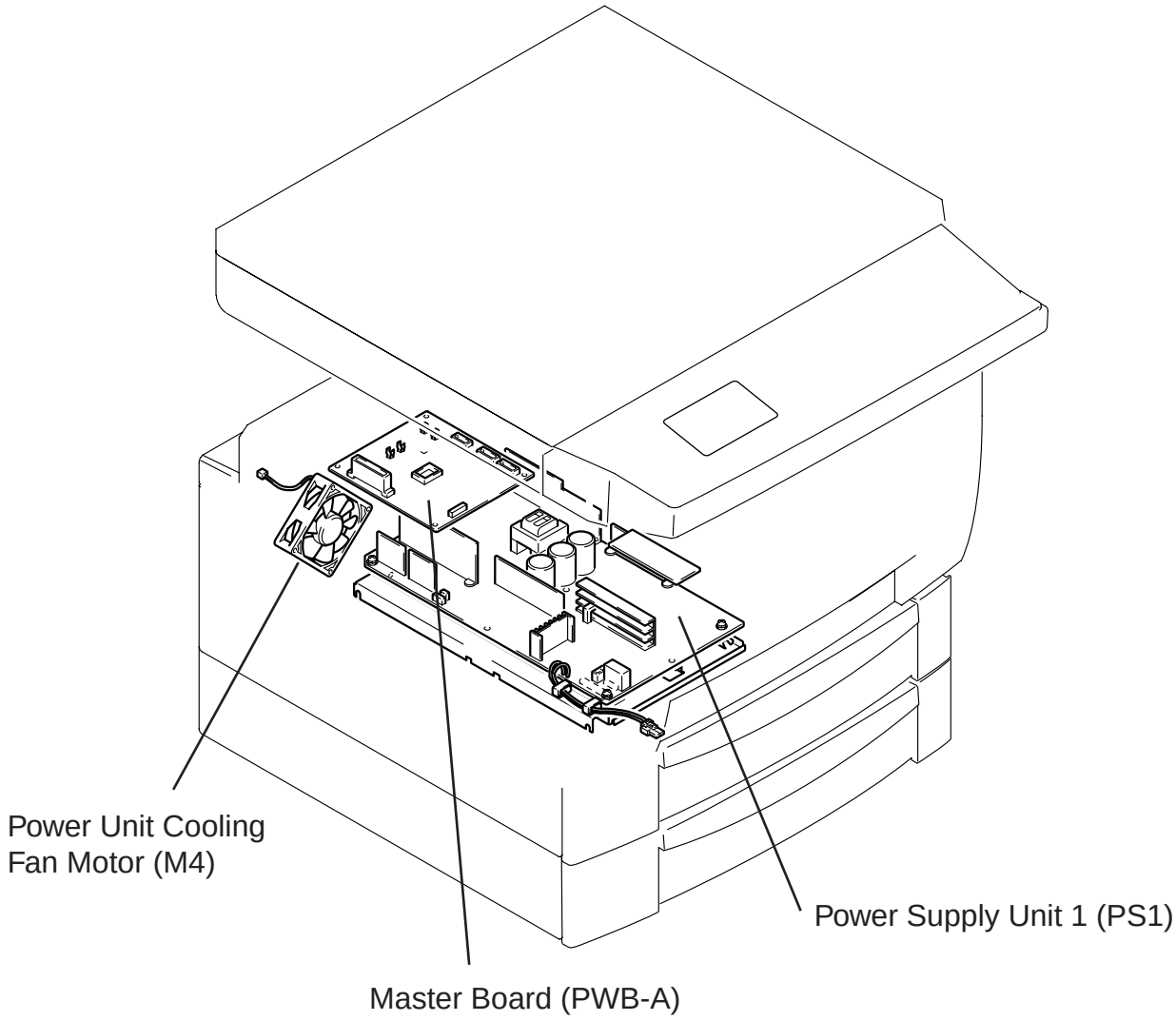
- The Fusing Cooling Fan Motor located in the Right Door prevents the temperature of the Fusing Unit Cover and the area above the I/C from rising inordinately. The motor also draws the paper after it has been separated from the PC Drum onto the transport guide to ensure that it is stably and smoothly fed into the Fusing Unit.



Electrical Component	Control Signal	During Copy Cycle	In Standby	During Warm-Up
		Full speed	Half speed	Stop
M3	PJ13A-3A See block diagram of the printer.	Pulse output		L

2.4.18 POWER UNIT COOLING FAN MOTOR

- The Power Unit Cooling Fan Motor prevents the temperature at the Power Supply Unit and the Polygon Motor in the PH from rising inordinately.



Electrical Component	Control Signal	While Main Motor is Turning	In Standby
		Full speed	Half speed
M4	PJ6A-2 See block diagram of the printer.	DC24V	DC10V

Section3
Software adjustment

3.1 Field Service Program Modes

The machine feature maintenance modes for machine adjustment. Each mode is listed below along with the command used to activate the mode and a brief functional description.

Set or Clear Machine Parameters.....MENU, *, 0
Used to set or clear machine parameters.

Set or Clear Memory Switches .....**MENU**, *****, **1**
Used to set or clear memory switches.

Clear Programmed Data / User Settings.....**MENU**, *****, **2**
Erases user-programmed information (date, time, TTI, autodialer, etc.) and any documents stored in memory.

All RAM Clear .....**MENU**, *****, **3**
Erases same information as “Clear Programmed Data / User Settings” function along with resetting all of the machine parameters, memory switches and unique switches to factory defaults.

Set or Clear Unique Switches.....**MENU**, *****, **4**
Used to set or clear Unique switches.

Print Program Mode List .....MENU, *, 8
Prints a list of the machine’s programming modes.

Test Modes .....MENU, *, 9
Allows the technician to perform a series of diagnostic tests.

Print Machine Parameters, Memory Switches and Unique Switches List.....MENU, *, A
Prints a list of the machine switch settings showing the default settings and current settings.

Factory Functions.....MENU, *, B
Allows the technician to perform a series of diagnostic tests.

Telephone Circuit Test Modes .....MENU, *, C
Allows the technician to perform a series of diagnostic tests.

Mirror Carriage Transfer Mode ..... MENU, *, E
Perform it before installing the machine.

Set and print the consumable order sheet..... MENU, *, F
Used to set and print the consumable order sheet.

DRAM Clear .....MENU, *, G
Used to clear a DRAM.

Clear Life Monitor .....MENU, *, H
Used to clear a Life monitor keeps a count of the pages scanned, etc.

Set Service Code .....MENU, *, J
Used to protect to clear a Life monitor.

Clear the consumable order sheet..... MENU, *, L
Used to clear the consumable order sheet.

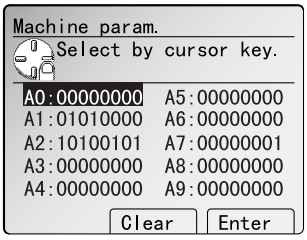
Reset Printer trouble .....MENU, *, M
Used to reset the printer trouble indication.

3.2 Machine Parameter Adjustment

3.2.1 Setting the Machine Parameters

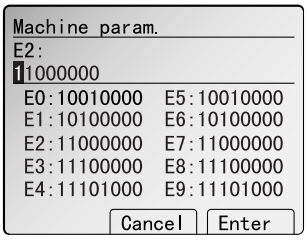
These switches are used to program internal machine parameters. The primary back up battery maintains these settings if power is lost.

1. From standby, press **MENU**, *****, **0**.



2. Select the desired parameter by cursor key or by pressing a one-touch key plus a number on the keypad. For example, to access parameter B:1, press one-touch “B” plus the number “1” on the numeric keypad.

3. Press **[Enter]**.



4. To navigate through the machine parameter settings:
   - Press ◄ or ► of the cursor key to move the cursor.
   - Press **0** or **1** on the numeric keypad to change the bit value.
   - Press **[Enter]** to save the setting of the displayed parameter and advance to the next parameter.
   - Press **[Cancel]** *not* to save the setting of the displayed parameter.

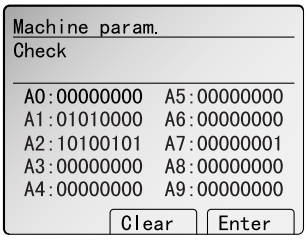
5. If you want to set other parameters, repeat step 3-5. Otherwise, proceed to step 6.

6. Press **RESET** to return the machine to standby.

3.2.2 Clearing the Machine Parameters

Resets the machine parameters to factory defaults.

1. From standby, press **MENU, *, 0, [Clear]**.



3. Press **[Enter]**. The machine parameters will reset to factory defaults.

Note: To finish the operation without clearing the parameters, press **[Cancel]**.

Machine Parameter A:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Country code	The country code enables the ROM to output the correct programming information for the respective country.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter A:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	1	Factory use only	
5	0	Factory use only	
4	1	Factory use only	
3	*	Output attenuation	See table below **Note:** The setting of this switch is available only when setting other than 0 dB *(and this setting is used instead of Memory Switch B:1, bit 3-0.)*
2	*		
1	*		
0	*		

Machine Parameter A:1…Output attenuation

Switch	-15 dB	-14 dB	-13 dB	-12 dB	-11 dB	-10 dB	-9 dB	-8 dB	-7 dB	-6 dB	-5 dB	-4 dB	-3 dB	-2 dB	-1 dB	-0 dB
3	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
2	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

Machine Parameter A:2

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Factory use only	
6	0	Factory use only	
5	1	Factory use only	
4	0	Factory use only	
3	1	DTMF output level attenuation	See table below.
2	1		
1	1		
0	1		

Machine Parameter A:2 _ DTMF output level attenuation — (Factory default is -15 dB)

Switch 3	Switch 2	Switch 1	Switch 0	Attenuation
0	0	0	0	0 dB
0	0	0	1	1 dB
0	0	1	0	2 dB
0	0	1	1	3 dB
0	1	0	0	4 dB
0	1	0	1	5 dB
0	1	1	0	6 dB
0	1	1	1	7 dB
1	0	0	0	8 dB
1	0	0	1	9 dB
1	0	1	0	10 dB
1	0	1	1	11 dB
1	1	0	0	12 dB
1	1	0	1	13 dB
1	1	1	0	14 dB
1	1	1	1	15 dB

Machine Parameter A:3 ~ A:6 — Factory use only

Machine Parameter A:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	DRAM capacity indication (Spare)	
6	0	DRAM capacity indication (Slot 2) P5B	This switch indicates the DRAM capacity. *(This switch is read only, do not set any character.)* You can see the memory capacity by how many “1” is indicated on the LCD. One “1” means 8MB. For example, if three “1” are indicated, i.e. “00000111”, the DRAM capacity is 8MB × 3 = 24MB.
5	0		
4	0		
3	0	DRAM capacity indication (Slot 1) P5A	
2	0		
1	1		
0	1	DRAM capacity indication On Main PCB	

Machine Parameter A:8 ~ A:9 — Factory use only

Machine Parameter B:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Leading edge document margin adjustment (ADF) Adjusts the leading edge margin from standby position to the start of the scanning position. 1 step = 5 / 600 dpi (0.2116 mm) **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 25 steps 00011001 +5.29 mm : 00100000 +6.77 mm : 00010000 +3.39 mm : 00001000 +1.69 mm : <u>00000011 +0.63 mm ← Initial setting</u> : 00000000 0 mm ← Standard : 10001000 -1.69 mm : 10010000 -3.39 mm : -25 steps 10011001 -5.29 mm
6	0		
5	0		
4	0		
3	0		
2	0		
1	1		
0	1		

Machine Parameter B:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjustment of the scanning stretching and squeezing for ADF. (Horizontal) The plus setting stretch the image data and the minus setting squeeze it. Each setting changes by 0.1%	Switch 76543210 Settings 00001111 +1.5 % : 00001000 +0.8 % : 00000100 +0.4 % : 00000010 +0.2 % 00000010 +0.1 % <u>00000000 0 % ← Initial setting</u> 00000010 -0.1 % 00000010 -0.2 % : 10000100 -0.4 % : 10001000 -0.8 % : 10001111 -1.5 %
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjustment of the scanning stretching and squeezing for ADF. (Vertical) The plus setting stretch the image data and the minus setting squeeze it. Each setting changes by 0.1%	Switch 76543210 Settings 00001111 +1.5 % : 00001000 +0.8 % : 00000100 +0.4 % ← Initial setting : 00000010 +0.2 % 00000010 +0.1 % 00000000 0 % ← Standard 00000010 -0.1 % 00000010 -0.2 % : 10000100 -0.4 % : 10001000 -0.8 % : 10001111 -1.5 %
6	0		
5	0		
4	0		
3	0		
2	1		
1	0		
0	0		

Machine Parameter B:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjusts the number of the steps from DS2 ON to the start of the scanning position. (ADF) 1 step = 1 / 300 inches × 2 (0.084666 mm × 2) **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 63 steps 00111111 +10.67 mm : 60 steps 00111100 +10.16 mm : 50 steps 00110010 +8.47 mm : 40 steps 00101000 +6.77 mm : 30 steps 00011110 +5.08 mm : 20 steps 00010100 +3.39 mm : 10 steps 00001010 +1.69 mm : 3steps 00000011 +0.51 mm 2steps 00000010 +0.34 mm 1 step 00000001 +0.17 mm 00000000 31 mm ← Initial setting When Switch 7 is “1”, it means “ - ”. For example, “10000001” means “-0.17 mm”.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjusts the number of the steps from DS2 OFF to the start of the scanning position. (ADF) 1 step = 1 / 300 inches × 2 (0.084666 mm × 2) **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 63 steps 00111111 +10.67 mm : 60 steps 00111100 +10.16 mm : 50 steps 00110010 +8.47 mm : 40 steps 00101000 +6.77 mm : 30 steps 00011110 +5.08 mm : 20 steps 00010100 +3.39 mm : 10 steps 00001010 +1.69 mm : 3steps 00000011 +0.51 mm 2steps 00000010 +0.34 mm 1 step 00000001 +0.17 mm <u>00000000 31 mm ← Initial setting</u> When Switch 7 is “1”, it means “ - ”. For example, “10000001” means “-0.17 mm”.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Leading edge document margin adjustment (FBS) Adjusts the leading edge margin from standby position to the start of the scanning position. 1 step = 5 / 600 dpi (0.2116 mm) **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 25 steps 00011001 +5.29 mm : 00100000 +6.77 mm : 00010000 +3.39 mm : 00001000 +1.69 mm : <u>00000101 +1.06 mm ← Initial setting</u> : 00000000 0 mm ← Standard : 10001000 -1.69 mm : 10010000 -3.39 mm : -25 steps 10011001 -5.29 mm
6	0		
5	0		
4	0		
3	0		
2	1		
1	0		
0	1		

Machine Parameter B:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjustment of the scanning stretching and squeezing for FBS. (Horizontal) The plus setting stretch the image data and the minus setting squeeze it. Each setting changes by 0.1%	Switch 76543210 Settings 00001111 +1.5 % : 00001000 +0.8 % : 00000100 +0.4 % : 00000010 +0.2 % 00000010 +0.1 % 00000000 0 % ← Initial setting 00000010 -0.1 % 00000010 -0.2 % : 10000100 -0.4 % : 10001000 -0.8 % : 10001111 -1.5 %
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjustment of the scanning stretching and squeezing for FBS. (Vertical) The plus setting stretch the image data and the minus setting squeeze it. Each setting changes by 0.1%	Switch 76543210 Settings 00001111 +1.5 % : 00001000 +0.8 % : 00000100 +0.4 % : 00000010 +0.2 % 00000010 +0.1 % 00000000 0 % ← Initial setting 00000010 -0.1 % 00000010 -0.2 % : 10000100 -0.4 % : 10001000 -0.8 % : 10001111 -1.5 %
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:8

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Leading edge document margin adjustment (FBS) Adjusts the number of the steps from the home sensor of the mirror carriage ON to the start of the scanning position. 1 step = 0.140793616 mm **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 31 steps 00011111 +4.36 mm : 16 steps 00010000 +2.25 mm : 8 steps 00001000 +1.13 mm : 4 steps 00000100 +0.56 mm : 2 step 00000010 +0.28 mm : 1 step 00000001 +0.14 mm 00000000 5 mm ← Initial setting -1 step 10000001 -0.14 mm : -2 steps 10000010 -0.28 mm : -4 steps 10000100 -0.56 mm : -8 steps 10001000 -1.13 mm : -16 steps 10010000 -2.25 mm : -31 steps 10011111 -4.36 mm
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter B:9 — Factory use only

Machine Parameter C:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Mirror carriage standby position adjustment Adjusts the number of the steps from the home sensor of the mirror carriage OFF to the standby position. 1 step = 0.140793616 mm **Note:** These values are factory set and should not be adjusted unless instructed by a Muratec technical representative.	Switch 76543210 Settings 63 steps 00111111 +8.87 mm : 60 steps 00111100 +8.45 mm : 50 steps 00110010 +7.04 mm : 40 steps 00101000 +5.63 mm : 30 steps 00011110 +4.22 mm : 20 steps 00010100 +2.82 mm : 10 steps 00001010 +1.41 mm : 3 steps 00000011 +0.42 mm 2 steps 00000010 +0.28 mm 1 step 00000001 +0.14 mm <u>00000000 36 mm ← Initial setting</u> When Switch 7 is “1”, it means “ - ”. For example, “10000001” means “-0.17 mm”.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter C:1 ~ C:9 — Factory use only

Machine Parameter D:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Scanning contrast level adjustment in normal resolution.	Switch 76543210 01111111 Darkest setting : 00001000 : <u>00000000 ← Initial setting</u> : 10001000 : 11111111 Lightest setting
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter D:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Scanning contrast level adjustment in fine resolution.	Switch 76543210 01111111 Darkest setting : 00001000 : 00000000 ← Initial setting : 10001000 : 11111111 Lightest setting
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter D:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Scanning contrast level adjustment in super-fine resolution.	Switch 76543210 01111111 Darkest setting : 00001000 : 00000000 ← Initial setting : 10001000 : 11111111 Lightest setting
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter D:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Scanning contrast level adjustment in hyper-fine resolution.	Switch 76543210 01111111 Darkest setting : 00001000 : 00000000 ← Initial setting : 10001000 : 11111111 Lightest setting
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter D:4 ~ D:6 — Factory use only

Machine Parameter D:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Scanning contrast level adjustment for copy resolution. Copy mode: Photo Contrast: Auto, 600 dpi	Switch 76543210 00111111 Darkest setting : 00000011 +3 00000010 +2 00000001 +1 00000000 ← Initial setting 11111111 -1 11111110 -2 11111101 -3 : 11000000 Lightest setting
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter D:8 ~ I:9 — Factory use only

Machine Parameter J:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	When set to “1”, the cassette is not available in fax reception. **Note:** This setting does not affect the rotate fax reception. See Machine Parameter J:1 for the rotate fax reception.
6	0	Factory use only	
5	0	Able to use the 1st cassette in normal fax reception. 0: Yes 1: No	
4	0	Able to use the Large Capacity Cassette in normal fax reception. 0: Yes 1: No	
3	0	Able to use the 5th cassette in normal fax reception. 0: Yes 1: No	
2	0	Able to use the 4th cassette in normal fax reception. 0: Yes 1: No	
1	0	Able to use the 3rd cassette in normal fax reception. 0: Yes 1: No	
0	0	Able to use the 2nd cassette in normal fax reception. 0: Yes 1: No	

Machine Parameter J:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	When set to “1”, the cassette is not available in rotate fax reception. **Note:** This setting does not affect the normal fax reception. See Machine Parameter J:0 for the normal fax reception.
6	0	Factory use only	
5	0	Able to use the 1st cassette in rotate fax reception. 0: Yes 1: No	
4	0	Able to use the Large Capacity Cassette in rotate fax reception. 0: Yes 1: No	
3	0	Able to use the 5th cassette in rotate fax reception. 0: Yes 1: No	
2	0	Able to use the 4th cassette in rotate fax reception. 0: Yes 1: No	
1	0	Able to use the 3rd cassette in rotate fax reception. 0: Yes 1: No	
0	0	Able to use the 2nd cassette in rotate fax reception. 0: Yes 1: No	

Machine Parameter J:2 ~ J:9 — Factory use only

Machine Parameter K:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 2nd cassette in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 3rd cassette in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 4th cassette in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 5th cassette in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the LCC in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 1st cassette in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Bypass tray in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Duplex unit in normal printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter L:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter K:8 ~ K:9 — Factory use only

Machine Parameter L:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 2nd cassette in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 3rd cassette in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 4th cassette in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 5th cassette in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the LCC in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 0 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 1st cassette in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 step 00001000 +0.8 mm : <u>00000000 0 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Bypass tray in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Duplex unit in rotate printing. Adjusts the start point to print. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter K:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter L:8 ~ L:9 — Factory use only

Machine Parameter M:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 2nd cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:0. **Note:** See Machine Parameter N:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 3rd cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:1. **Note:** See Machine Parameter N:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 4th cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:2. **Note:** See Machine Parameter N:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 5th cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:3. **Note:** See Machine Parameter N:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Large Capacity Cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:4. **Note:** See Machine Parameter N:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 1st cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:5. **Note:** See Machine Parameter N:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Bypass tray in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:6. **Note:** See Machine Parameter N:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Duplex unit in normal printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter Q:7. **Note:** See Machine Parameter N:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter M:8 ~ M:9 — Factory use only

Machine Parameter N:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 2nd cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:0. **Note:** See Machine Parameter M:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 3rd cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:1. **Note:** See Machine Parameter M:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 4th cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:2. **Note:** See Machine Parameter M:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 5th cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:3. **Note:** See Machine Parameter M:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Large Capacity Cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:4. **Note:** See Machine Parameter M:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the 1st cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:5. **Note:** See Machine Parameter M:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Bypass tray in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:6. **Note:** See Machine Parameter M:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Horizontal) at the Duplex unit in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the right and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the right margin in Machine Parameter R:7. **Note:** See Machine Parameter M:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter N:8 ~ N:9 — Factory use only

Machine Parameter O:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 2nd cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 3rd cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 4th cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 5th cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Large Capacity Cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 1st cassette in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Bypass tray in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Duplex unit in normal printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter P:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter O:8 ~ O:9 — Factory use only

Machine Parameter P:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 2nd cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 3rd cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 4th cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 5th cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Large Capacity Cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the 1st cassette in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Bypass tray in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the left margin at the Duplex unit in rotate printing. The plus setting increase the left margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter O:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only left margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter P:8 ~ P:9 — Factory use only

Machine Parameter Q:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 2nd cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 3rd cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 4th cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 5th cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Large Capacity Cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 1st cassette in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Bypass tray in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Duplex unit in normal printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter R:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Q:8 ~ Q:9 — Factory use only

Machine Parameter R:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 2nd cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 3rd cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 4th cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 5th cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Large Capacity Cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the 1st cassette in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Bypass tray in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the right margin at the Duplex unit in rotate printing. The plus setting decrease the right margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Q:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only right margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter R:8 ~ R:9 — Factory use only

Machine Parameter S:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 2nd cassette in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 3rd cassette in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 4th cassette in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 5th cassette in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the LCC in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 1st cassette in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Bypass tray in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Duplex unit in normal printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter T:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter S:8 ~ S:9 — Factory use only

Machine Parameter T:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 2nd cassette in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 3rd cassette in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 4th cassette in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 5th cassette in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the LCC in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 1st cassette in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 step 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Bypass tray in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Duplex unit in rotate printing. Adjusts the start point to print. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter S:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter T:8 ~ T:9 — Factory use only

Machine Parameter U:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 2nd cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:0. **Note:** See Machine Parameter V:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 3rd cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:1. **Note:** See Machine Parameter V:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 4th cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:2. **Note:** See Machine Parameter V:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 5th cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:3. **Note:** See Machine Parameter V:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Large Capacity Cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:4. **Note:** See Machine Parameter V:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 1st cassette in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:5. **Note:** See Machine Parameter V:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Bypass tray in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:6. **Note:** See Machine Parameter V:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Duplex unit in normal printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Y:7. **Note:** See Machine Parameter V:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter U:8 ~ U:9 — Factory use only

Machine Parameter V:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 2nd cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:0. **Note:** See Machine Parameter U:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 3rd cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:1. **Note:** See Machine Parameter U:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 4th cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:2. **Note:** See Machine Parameter U:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 5th cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:3. **Note:** See Machine Parameter U:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Large Capacity Cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:4. **Note:** See Machine Parameter U:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the 1st cassette in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:5. **Note:** See Machine Parameter U:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Bypass tray in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:6. **Note:** See Machine Parameter U:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment (Vertical) at the Duplex unit in rotate printing. Adjusts the end point to print. The plus setting increase the print range to the bottom and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** Adjust the bottom margin in Machine Parameter Z:7. **Note:** See Machine Parameter U:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 0 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** Set this switch after setting the margin to "0 mm" in Unique Switch F:2. Then, after setting this switch, set the margin to the initial setting (4 mm) in Unique Switch F:2.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter V:8 ~ V:9 — Factory use only

Machine Parameter W:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 2nd cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 3rd cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 4th cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 5th cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Large Capacity Cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 1st cassette in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Bypass tray in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Duplex unit in normal printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter X:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter W:8 ~ W:9 — Factory use only

Machine Parameter X:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 2nd cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 3rd cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 4th cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 5th cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Large Capacity Cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the 1st cassette in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Bypass tray in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the top margin at the Duplex unit in rotate printing. The plus setting increase the top margin and the minus setting decrease it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter W:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only top margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter X:8 ~ X:9 — Factory use only

Machine Parameter Y:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 2nd cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:0 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 3rd cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:1 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 4th cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:2 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 5th cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:3 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Large Capacity Cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:4 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 1st cassette in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:5 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Bypass tray in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:6 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Duplex unit in normal printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Z:7 for the rotate printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Y:8 ~ Y:9 — Factory use only

Machine Parameter Z:0

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 2nd cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:0 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:1

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 3rd cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:1 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:2

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 4th cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:2 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:3

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 5th cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:3 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:4

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Large Capacity Cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:4 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:5

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the 1st cassette in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:5 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : 00000000 4 mm ← Initial setting : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:6

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Bypass tray in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:6 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:7

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer registration adjustment. Adjusts the bottom margin at the Duplex unit in rotate printing. The plus setting decrease the bottom margin and the minus setting increase it. Each setting changes by 0.1 mm. **Note:** See Machine Parameter Y:7 for the normal printing.	Switch 76543210 Settings 127 steps 01111111 +12.7 mm : 32 steps 00100000 +3.2 mm : 16 steps 00010000 +1.6 mm : 8 steps 00001000 +0.8 mm : <u>00000000 4 mm ← Initial setting</u> : -8 steps 11110111 -0.8 mm : -16 steps 11101111 -1.6 mm : -128 steps 10000000 -12.8 mm **Note:** The surrounding margin (right / left / top / bottom) is set in Unique Switch F:2. If you want to adjust only bottom margin, adjust it in this switch.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Machine Parameter Z:8 ~ Z:9 — Factory use only

Scanner Adjustment

1. Set an A3-sized paper in the cassette.
2. Set the printing margin to “0 mm” in Unique Switch F:2.
3. Print the test pattern (Ladder pattern).
4. Confirm that four black squares are printed without lacking. The square is 10 mm × 10 mm.
   If it is lacking, proceed to step 5. Otherwise, skip to step 6.
5. Adjust the start and end point to print of the cassette you loaded the A3-sized paper in Machine Parameter K, M, S, U.
6. Make a copy (100%) with an A3-sized paper.
7. Compare the copy with the original document and confirm that the copy is printed correctly
   If it is not printed correctly, proceed to step8. Otherwise, skip to step 9.
8. Adjust the scanning position in Machine Parameter B.
9. After finishing the adjustment, set the printing margin to “4 mm” in Unique Switch F:2.

Printing position Adjustment

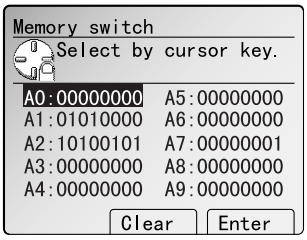
1. Adjust the scanner.
2. Set the printing margin to “0 mm” in Unique Switch F:2.
3. Make a copy with a cassette you want.
4. Confirm that it is printed at center of the paper.
   If not, proceed to step 5. Otherwise, skip to step 6.
5. Adjust the start and end point to print of the cassette you used in Machine Parameter K, M, S, U.
   In the case of the rotate printing, adjust it in Machine Parameter L, N, T, V.
6. Set the printing margin to “4 mm” in Unique Switch F:2.
7. Adjust the each margin to set the printing margin to “4 mm”, if necessary.
   In the case of the rotate printing, adjust it in Machine Parameter P, R, X, Z, if necessary.
8. Repeat step 3 ~ 7 for other cassettes.

3.3 Memory Switch Adjustment

3.3.1 Setting the Memory Switches

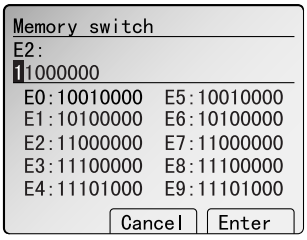
These switches are used to program internal machine parameters. The primary back up battery maintains these settings if power is lost.

1. From standby, press **MENU**, *****, **1**.



2. Select the desired memory switch by cursor key or by pressing a one-touch key plus a number on the keypad. For example, to access memory switch B:1, press one-touch “B” plus the number “1” on the numeric keypad.

3. Press **[Enter]**.



4. To navigate through the memory switch settings:

- Press ◄ or ► of the cursor key to move the cursor.
- Press **0** or **1** on the numeric keypad to change the bit value.
- Press **[Enter]** to save the setting of the displayed memory switch and advance to the next memory switch.
- Press **[Cancel]** *not* to save the setting of the displayed memory switch.

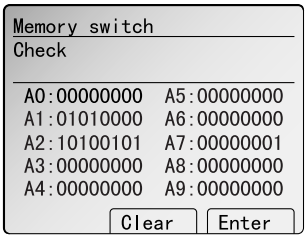
5. If you want to set other memory switches, repeat step 3-5. Otherwise, proceed to step 6.

6. Press **RESET** to return the machine to standby.

3.3.2 Clearing the Memory Switches

Resets the memory switches to factory defaults.

1. From standby, press **MENU, *, 1, [Clear]**.



3. Press **[Enter]**. The memory switches will reset to factory defaults.

Note: To finish the operation without clearing the memory switches, press **[Cancel]**.

Memory Switch A:0 - Dialer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	DIS detect time after dialing 0: 55 sec 1: 70 sec	Sets the time DIS signal is detected after dialing a number.
2	1	CED detection 0: No 1: Yes	Can be use to ignore CED detection if noise on the telephone line is mistaken as a 2100 Hz CED signal.
1	1	Dial tone detection 0: Do not dial 1: Dial	Determines if the machine proceeds with dialing or indicates an error if no dial tone is detected within five seconds of going off-hook.
0	0	Phone line type 0: PSTN 1: PBX	When set to PSTN, the machine checks for dial tone and acts according to the setting of memory switch A:0, bit 1. When set to PBX, the machine always dials a given number of seconds after going off-hook. Memory switch A:1 sets the number of seconds.

Memory Switch A:1 - Dialer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	PBX mode dial pause	Sets the number of seconds the machine waits before dialing when memory switch A:2, bit 0 is set to PBX mode. Switch 3 2 1 0 Pause time 0 0 0 0 0 sec 0 0 0 1 1 sec 0 0 1 0 2 sec <u>0 0 1 1 3 sec Initial setting</u> 0 1 0 0 4 sec 0 1 0 1 5 sec 0 1 1 0 6 sec 0 1 1 1 7 sec 1 0 0 0 8 sec 1 0 0 1 9 sec 1 0 1 0 10 sec 1 0 1 1 11 sec 1 1 0 0 12 sec 1 1 0 1 13 sec 1 1 1 0 14 sec 1 1 1 1 15 sec
2	0		
1	1		
0	1		

Memory Switch A:2 - Dialer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Phone line type for the second phone line? 0: PSTN 1: PBX	When set to PSTN, the machine checks for dial tone and acts according to the setting of memory switch A:0, bit 1. When set to PBX, the machine always dials a given number of seconds after going off-hook. Memory switch A:1 sets the number of seconds.

Memory Switch A:3 ~ A:4 — Factory use only

Memory Switch A:5 - Dialer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	1	Factory use only	
5	1	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Dual ring detection 0: No 1: Yes	When enabled, the machine is able to auto answer an incoming ring with an off time of 120 - 60 ms.
1	0	Long ring detection 0: No 1: Yes	Allows the machine to respond to an incoming ring if the ring on-time is longer than two seconds.
0	1	Ring frequency detection 0: No 1: Yes	When disabled, the machine will not check the ring frequency of incoming rings.

Memory Switch A:6 ~ A:9 — Factory use only

Memory Switch B:0 - Transmission

<table>
<tr><th>Switch</th><th>Initial Setting</th><th>Adjust</th><th>Usage/Comments</th></tr>
<tr><td>7</td><td>1</td><td>Busy tone detection
0: No
1: Yes</td><td>Sets this switch to “0” if the ring tone of remote unit is mistaken for a busy signal.</td></tr>
<tr><td>6</td><td>0</td><td colspan="2">Fallback pattern (bps)
2400 4800 7200 9600 14400
Set at 0: 2 times 2 times 2 times 2 times 2 times
Set at 1: 4 times 1 times 1 times 1 times 1 times</td></tr>
<tr><td>5</td><td>0</td><td>Overseas mode
0: No
1: Yes</td><td>Re-enables echo suppression that is disabled by the CED signal (2100 Hz). Also ignores the first DIS signal and transmits the DCS signal in response to the second DIS signal.</td></tr>
<tr><td>4</td><td>0</td><td>V.29 Echo Protect tone
0: No
1: Yes</td><td>International telephone lines equipped with echo suppression will cut the beginning portion of the transmitted information which may cause the receiver not to receive the training and data. To protect the received image from degrading, a 0.5 second Echo Protect tone is placed prior to the training using G3 high speed modem training (V.29).</td></tr>
<tr><td>3</td><td>1</td><td colspan="2" rowspan="5">Maximum transmit speed (kbps)
2.4 4.8 7.2 9.6 12 14.4 16.8 19.2 21.6 24 26.4 28.8 31.2 33.6
0 0 0 0 0 0 0 0 1 1 1 1 1 1
0 0 0 0 1 1 1 1 0 0 0 0 1 1
0 0 1 1 0 0 1 1 0 0 1 1 0 0
0 1 0 1 0 1 0 1 0 1 0 1 0 1</td></tr>
<tr><td>2</td><td>1</td></tr>
<tr><td>1</td><td>0</td></tr>
<tr><td>0</td><td>1</td></tr>
</table>

Memory Switch B:1 - Transmission

<table>
<tr><th>Switch</th><th>Initial Setting</th><th>Adjust</th><th>Usage/Comments</th></tr>
<tr><td>7</td><td>0</td><td colspan="2" rowspan="2">The time between reception of CFR and transmission of data

When CFR and data overlap due to line echo, increase the interval between CFR and data transmission using this switch.

250 ms 500 ms 750 ms 1000 ms
Switch 7 0 0 1 1
Switch 6 0 1 0 1</td></tr>
<tr><td>6</td><td>1</td></tr>
<tr><td>5</td><td>0</td><td colspan="2" rowspan="2">Interval between DCS and TCF

When FTT is received after DCS and TCF signals due to line echo, increase the interval between DCS and TCF signals using this switch.

75 ms 300 ms 450 ms 600 ms
Switch 5 0 0 1 1
Switch 4 0 1 0 1</td></tr>
<tr><td>4</td><td>0</td></tr>
<tr><td>3</td><td>1</td><td rowspan="4">Output attenuation</td><td rowspan="4">See table below</td></tr>
<tr><td>2</td><td>0</td></tr>
<tr><td>1</td><td>0</td></tr>
<tr><td>0</td><td>1</td></tr>
</table>

Memory Switch B:1…Output attenuation

Switch	-15 dB	-14 dB	-13 dB	-12 dB	-11 dB	-10 dB	-9 dB	-8 dB	-7 dB	-6 dB	-5 dB	-4 dB	-3 dB	-2 dB	-1 dB	-0 dB
3	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
2	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

Memory Switch B:2 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Data signaling rate (DCS) 0: V.17 1: V.33	Determines communication protocol.
6	0	Forced received print when transmitting from memory 0: No 1: Yes	Will force a remote Muratec machine with memory receive capabilities to print directly. This switch will prevent a memory overflow error at the remote unit.
5	0	Changing the date format of the transmitted TTI 0: No 1: Yes	When set to “1”, the machine changes the date format of the transmitted TTI from MM:DD:YY, or vice versa.
4	1	TTI transmit 0: No 1: Yes	When set at “0”, transmission of the TTI is disabled. (Note: Turning TTI transmission off may violate local or federal regulations.)
3	0	ECM response time 0: 3 sec 1: 4.8 sec	The time limit to receive the response signal for the ECM post message.
2	0	ECM error retransmit time 0: 200 ms 1: 400 ms	The time limit before the ECM error is retransmitted.
1	0	Interval between DIS and DCS	
0	0	0 ms 500 ms 1000 ms 1500 ms Switch 1 0 0 1 1 Switch 0 0 1 0 1	

Memory Switch B:3 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	ANSam detection 0: Yes 1: No	During the V8 handshake, if some noise disturbs the handshake and an error occurs, set to “1”.
6	0	V.34 transmission 0: Yes 1: No	Individual setting for V.34 transmission.
5	0	CSI/TSI/CIG transmit 0: Yes 1: No	When set at “1”, transmission of the CSI, TSI and CIG signals are disabled.
4	0	ECM mode 0: On 1: Off	Determines ECM mode. ECM mode reduces document memory and may lengthen transmission and reception times.
3	0	Retransmit automatically when receiving RTN/PIN signals 0: Yes 1: No	When set to “1”, retransmission disables automatically if receiving RTN/PIN signals.
2	1	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

Memory Switch B:4 — Factory use only

Memory Switch B:5 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Program individual autodialer attributes 0: No 1: Yes	Allows individual setting of memory switches B:0 as attribute 1, B:1 as attribute 2, B:2 as attribute 3 and B:3 as attribute 4 when one-touch and speed dial locations are programmed. (Refer to page 3-97 for settings.)
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Sending RTC signal when transmission is canceled 0: Yes 1: No	RTC signal is sent at the end of the transmission. When set at “0”, the machine will send the RTC if the transmission is canceled. No error will occur. When set at “1”, an error will occur because RTC will not be sent at the end of a canceled transmission.
1	1	Cancel redial if T.4.1 or T.4.4 error occurs 0: Yes 1: No	When set at “0”, if a T.4.1 or T.4.4 error occurs, the machine will not retry the transmission.
0	0	Action after EOR signal 0: Continue 1: Discontinue	Sets action after receiving PPR four times at 2400 bps.

Memory Switch B:6 ~ B:9 — Factory use only

Memory Switch C:0 - Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Data error rate 0: 10% 1: 20%	Determines the allowable number of erred lines out of total lines received in a document.
6	0	Pause one second after sending CED 0: No (75 ms) 1: Yes (1 sec)	A 2100 Hz CED signal disables echo suppression in some telephone equipment. When set to "1", the machine pauses one second after sending CED, which allows echo suppression to restart. This may help with problematic overseas reception.
5	0	Factory use only	
4	0	Factory use only	
3	1	Receive speed (kbps)	
2	1	Maximum receive speed may be slowed to compensate for poor phone lines.	
1	0	2.4 4.8 7.2 9.6 12 14.4 16.8 19.2 21.6 24 26.4 28.8 31.2 33.6	
0	1	0 0 0 0 0 0 0 0 1 1 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1	

Memory Switch C:1 - Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Received document length limit 0: No limit 1: 3 m (9.8 feet)	Set the limit of received document length.
4	0	T1 timer 0: 35 sec 1: 20 sec	Adjusts the T1 time-out. After the machine dials the remote machine's phone number, it begins sending CNG and waits this amount of time before disconnecting the line.
3	1	Print image data when post message is not received after receiving RTC signal 0: No 1: Yes	If the received document includes the RTC, the machine prints the data even though the following protocol is not succeeded.
2	0	Disable ITU-T superfine reception 0: Yes 1: No	Set to "1" if a compatibility error occurs because the transmitting machine does not understand the extended frame for ITU-T superfine resolution. (Note: Setting this switch to "1" will disable superfine mode.)
1	0	G3 echo receive Adjusts the delay between detection of training/TCF and sending of CFR. 100 ms 500 ms 800 ms 1200 ms Switch 1 0 0 1 1 Switch 0 0 1 0 1	
0	1		

Memory Switch C:2 ~ C:9 — Factory use only

Memory Switch D:0 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Number of HDLC end flags	Defines the number of HDLC end flags. Switch 7 6 5 4 0 0 0 0 1 0 0 0 1 2 0 0 1 0 3 Initial setting 0 0 1 1 4 0 1 0 0 5 0 1 0 1 6 0 1 1 0 7 0 1 1 1 8 1 0 0 0 9 1 0 0 1 10 1 0 1 0 11 1 0 1 1 12 1 1 0 0 13 1 1 0 1 14 1 1 1 0 15 1 1 1 1 16
6	0		
5	1		
4	0		
3	0	Factory use only	
2	1	Group delay compensation 0: No 1: Yes	As if two exchangers are selected to communicate each other, compensate the group delay.
1	0	Digital cable equalizer 0: Free 1: Hold	When set to “1”, become efficient for the line short break, but become weak for the line noise. It’s available only for communication at 14,400 or 12,000 bit/s.
0	1	Carrier detection level 0: -43/48 dB 1: -47/52 dB	Setting this switch to “1” increases the sensitivity.

Memory Switch D:1 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	1	EYE-Q check level at	0 0 1 1
6	0	7200 bps	Strict-- - - - - - - - - - - -Lenient
			0 1 0 1
5	1	EYE-Q check level at	0 0 1 1
4	0	9600 bps	Strict - - - - - - - - - - - -Lenient
			0 1 0 1
3	1	EYE-Q check level at	0 0 1 1
2	0	12000 bps	Strict - - - - - - - - - - - -Lenient
			0 1 0 1
1	1	EYE-Q check level at	0 0 1 1
0	0	14400 bps	Strict - - - - - - - - - - - -Lenient
			0 1 0 1

Memory Switch D:2 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	EYE-Q slice level 0: Disable 1: Enable	Setting this bit to “1” enables memory switch D:2, bits 0-3 and memory switch D:1, bits 0-7 and enables EYE-Q check adjustment.
6	1	Check EYE-Q 0: No 1: Yes	Set at 0: Line condition status (EYE-Q) is not checked after checking TCF. Set at 1: Line condition status (EYE-Q) is checked after checking TCF.
5	0	Factory use only	
4	0	Factory use only	
3 2	1 0	EYE-Q check level at 2400 bps	0 0 1 1 Strict - - - - - - - - - - - -Lenient 0 1 0 1
1 0	1 0	EYE-Q check level at 4800 bps	0 0 1 1 Strict - - - - - - - - - - - -Lenient 0 1 0 1

Memory Switch D:3 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Delete receive echo of CFR at the receiver side 0: No 1: Yes	Modem will be opened only in high-speed mode. Sets this switch to “1” to resolve the problem caused of the echo of CFR.
0	0	Expand FSK receive time after detecting flag 0: 3.3 seconds 1: 10 seconds	Setting this switch to “1” extend HDLC frame receive timer in FSK from 3.3 seconds to 10 seconds after detecting pre-amble.

Memory Switch D:4 ~ D:9 — Factory use only

Memory Switch E:0 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	1	Factory use only	
1	0	Factory use only	
0	1	Document TX length limit 0: 3.6 meters 1: 1 meter	Setting to unlimited will override document jam sensing.

Memory Switch E:1 ~ F:9 — Factory use only

Memory Switch G:0 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	1	CML relay off time after dialing 0: 1 sec 1: 200 ms	When dialing from the keypad, phone line noise may occur as the CML relay switches on and off. Set this switch to “0” to avoid this.
5	0	DTMF tones heard through handset 0: No 1: Yes	Determines if DTMF tones are produced through the handset in off-hook dialing.
4	0	Factory use only	
3	0	Factory use only	
2	0	Switch to fax upon TAD disconnect 0: No 1: Yes	In Ans/Fax Ready mode, if this switch is set to “1”, the machine will switch to fax when any device connected to the external telephone jack, such as a second phone or TAD, hangs up.
1	0	Remote reception from the second phone 0: No 1: Yes	Ability to perform remote reception (hook-flash transfer) from the second phone.
0	0	Remote reception from fax handset 0: No 1: Yes	Ability to perform remote reception (hook-flash transfer) from the fax handset.

Memory Switch G:1 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Off-hook / on-hook detect time (remote reception)	Sets the time interval between the off-hook/on-hook condition for remote reception. Switch 7 6 5 4 Time 0 0 0 0 0 ms 0 0 0 1 10 ms 0 0 1 0 20 ms 0 0 1 1 30 ms Initial setting 0 1 0 0 40 ms 0 1 0 1 50 ms 0 1 1 0 60 ms 0 1 1 1 70 ms 1 0 0 0 80 ms 1 0 0 1 90 ms 1 0 1 0 100 ms 1 0 1 1 110 ms 1 1 0 0 120 ms 1 1 0 1 130 ms 1 1 1 0 140 ms 1 1 1 1 150 ms
6	0		
5	1		
4	1		
3	0	Off-hook / on-hook detect time	Sets the time interval between the on-hook and off-hook(or off-hook/on-hook) condition. Switch 3 2 1 0 Time 0 0 0 0 0 ms 0 0 0 1 100 ms 0 0 1 0 200 ms 0 0 1 1 300 ms 0 1 0 0 400 ms Initial setting 0 1 0 1 500 ms 0 1 1 0 600 ms 0 1 1 1 700 ms 1 0 0 0 800 ms 1 0 0 1 900 ms 1 0 1 0 1000 ms 1 0 1 1 1100 ms 1 1 0 0 1200 ms 1 1 0 1 1300 ms 1 1 1 0 1400 ms 1 1 1 1 1500 ms
2	1		
1	0		
0	0		

Memory Switch G:2 - Remote reception

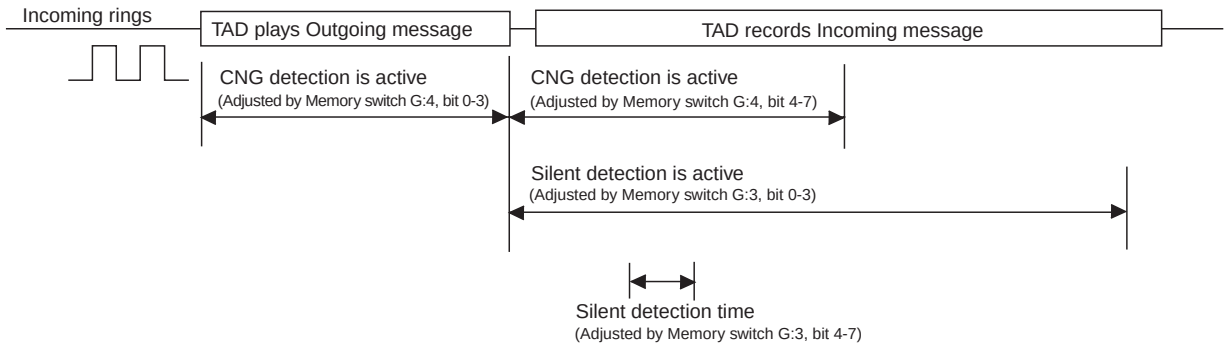
Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	1	Factory use only	
3	0	Switch-hook time	If the switch hook is quickly depressed and released, switch-to-fax will occur. This setting adjusts how quickly the switch hook activation must be. Switch 3 2 1 0 Time 0 0 0 0 0 ms 0 0 0 1 100 ms 0 0 1 0 200 ms 0 0 1 1 300 ms Initial setting 0 1 0 0 400 ms 0 1 0 1 500 ms 0 1 1 0 600 ms 0 1 1 1 700 ms 1 0 0 0 800 ms 1 0 0 1 900 ms 1 0 1 0 1000 ms 1 0 1 1 1100 ms 1 1 0 0 1200 ms 1 1 0 1 1300 ms 1 1 1 0 1400 ms 1 1 1 1 1500 ms
2	0		
1	1		
0	1		

Memory Switch G:3 - Remote reception and TAD interface

Switch	Initial Setting	Adjust	Usage/Comments
7 6 5 4	0 1 0 1	Adjust silent detection time	This switch adjusts the length of silence required for silent detection activation. Switch 7 6 5 4 Time 0 0 0 0 0 sec 0 0 0 1 1 sec 0 0 1 0 2 sec 0 0 1 1 3 sec 0 1 0 0 4 sec 0 1 0 1 5 sec Initial setting 0 1 1 0 6 sec 0 1 1 1 7 sec 1 0 0 0 8 sec 1 0 0 1 9 sec 1 0 1 0 10 sec 1 0 1 1 11 sec 1 1 0 0 12 sec 1 1 0 1 13 sec 1 1 1 0 14 sec 1 1 1 1 15 sec
3 2 1 0	0 1 1 0	Number of seconds silent detection remains active	This switch adjusts the length of time silence detection remains active. Switch 3 2 1 0 Time 0 0 0 0 0 sec 0 0 0 1 10 sec 0 0 1 0 20 sec 0 0 1 1 30 sec 0 1 0 0 40 sec 0 1 0 1 50 sec 0 1 1 0 60 sec Initial setting 0 1 1 1 70 sec 1 0 0 0 80 sec 1 0 0 1 90 sec 1 0 1 0 100 sec 1 0 1 1 110 sec 1 1 0 0 120 sec 1 1 0 1 130 sec 1 1 1 0 140 sec 1 1 1 1 150 sec

Memory Switch G:4 - Remote reception and TAD interface

Switch	Initial Setting	Adjust	Usage/Comments
7 6 5 4	0 0 1 1	CNG detect period after TAD begins recording ICM	Sets the period during which CNG is detected after the TAD begins recording incoming messge. Switch 7 6 5 4 Time 0 0 0 0 0 sec 0 0 0 1 10 sec 0 0 1 0 20 sec 0 0 1 1 30 sec Initial setting 0 1 0 0 40 sec 0 1 0 1 50 sec 0 1 1 0 60 sec 0 1 1 1 70 sec 1 0 0 0 80 sec 1 0 0 1 90 sec 1 0 1 0 100 sec 1 0 1 1 110 sec 1 1 0 0 120 sec 1 1 0 1 130 sec 1 1 1 0 140 sec 1 1 1 1 150 sec
3 2 1 0	0 0 0 1	CNG detect period after TAD answers	Sets the period during which CNG is detected after the TAD answers an incoming call. Switch 3 2 1 0 Time 0 0 0 0 0 sec 0 0 0 1 10 sec Initial setting 0 0 1 0 20 sec 0 0 1 1 30 sec 0 1 0 0 40 sec 0 1 0 1 50 sec 0 1 1 0 60 sec 0 1 1 1 70 sec 1 0 0 0 80 sec 1 0 0 1 90 sec 1 0 1 0 100 sec 1 0 1 1 110 sec 1 1 0 0 120 sec 1 1 0 1 130 sec 1 1 1 0 140 sec 1 1 1 1 150 sec


Incoming rings
TAD plays Outgoing message
TAD records Incoming message
CNG detection is active
(Adjusted by Memory switch G:4, bit 0-3)
CNG detection is active
(Adjusted by Memory switch G:4, bit 4-7)
Silent detection is active
(Adjusted by Memory switch G:3, bit 0-3)
Silent detection time
(Adjusted by Memory switch G:3, bit 4-7)

Memory Switch G:5 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjustment of CI detect time	Sets the time added to or reduced from the CI detect time. Switch 7 6 5 4 3 Time 1 1 1 1 1 15 msec 1 1 1 1 0 14 msec : : 1 0 1 0 0 4 msec 1 0 0 1 1 3 msec 1 0 0 1 0 2 msec 1 0 0 0 1 1 msec 0 0 0 0 0 0 msec Initial setting 0 0 0 0 1 -1 msec 0 0 0 1 0 -2 msec 0 0 0 1 1 -3 msec 0 0 1 0 0 -4 msec : : 0 1 1 1 0 -14 msec 0 1 1 1 1 -15 msec
6	0		
5	0		
4	0		
3	0		
2	0	Factory use only	
1	0	Factory use only	
0	0	Beep if fax handset hang up 0: Yes 1: No	Determines if your machine beeps when having left the fax's handset hanging up after communication.

Memory Switch G:6 - Remote reception and TAD interface

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Off-hook / on-hook detect time for remote reception	Sets the time interval between the off-hook/on-hook condition for remote reception. Switch 7 6 5 4 3 2 1 0 Time 0 0 0 0 0 0 0 0 30 ms Initial setting 0 0 0 0 0 0 0 1 20 ms 0 0 0 0 0 0 1 0 40 ms 0 0 0 0 0 0 1 1 60 ms 0 0 0 0 0 1 0 0 80 ms | | 1 1 1 1 1 1 1 0 5080 ms 1 1 1 1 1 1 1 1 5100 ms **Note:** Refer to Memory Switch G:1.
6	0		
5	0		
4	0		
3	0		
2	0		
1	0		
0	0		

Memory Switch G:7 ~ G:9 — Factory use only

Memory Switch H:0 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Display error line 0: No 1: Yes	The number of error lines contained in the received data will be shown in the LCD.
6	0	Total line monitor 0: No 1: Yes	Allows fax communication to be heard through the monitor speaker.
5	0	Factory use only	
4	0	Sort autodialer printout 0: Sort by autodialer location 1: Sort by location ID	Specifies how entries on autodialer printouts are sorted.
3	1	Print check message if power is lost 0: No 1: Yes	In the event of two power losses in a 40 hour period, documents will be lost. When power is restored, a check message will print.
2	1	Print page if error occurs during memory transmission 0: No 1: Yes	For easy identification, the first page of a document stored for memory transmission will print along a check message if an error occurs during memory transmission.
1	1	Print check message 0: No 1: Yes	To notify the user of an error, a check message can be printed if a communication error occurs.
0	0	Stop printing check message for a memory transmission by pressing the stop key 0: No 1: Yes	Determines if pressing the stop key stop printing the check message for a memory transmission.

Memory Switch H:1 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	1	Print TCR with the original page during memory transmission when the result is NG 0: No 1: Yes	For easy identification, the first page of a document stored for memory transmission will print along a TCR when the transmission result is NG.
4	0	Factory use only	
3	1	Print TCR with the original page during memory transmission when the result is OK 0: No 1: Yes	For easy identification, the first page of a document stored for memory transmission will print along a TCR when the transmission result is OK.
2	0	Factory use only	
1	0	Factory use only	
0	0	Display modem speed 0: No 1: Yes	The transmit/receive speed is displayed in the LCD.

Memory Switch H:2 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	1	Erase polled document 0: No 1: Yes	Determines if a document stored for polling is erased after being polled.
0	1	Print TCR after the batch transmission 0: No 1: Yes	Determines if printing the confirmation report after completing the batch transmission.

Memory Switch H:3 ~ J:9 — Factory use only

3.4 Clear Programmed Data / User Settings

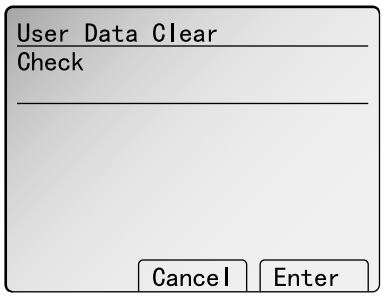
User programmed information such as autodialer entries, date, time, Transmit Terminal Identifier (TTI), Subscriber ID, etc., are stored in the machine's Random Access Memory (RAM). This information is held by a battery back up when the power is lost.

This function does not clear the machine parameters, memory switches and unique switches. Therefore, this setting is useful to reset the user programmed information but leave specific parameters and switches configured for a particular telephone system, etc.

To reset only each switch, see page 3-2, 3-79 and 3-100.

Note: If desired, the All RAM Clear setting can be used to erase all user programmed information, all documents in memory, and reset the memory switches and machine parameters to factory defaults. For information on the All RAM Clear setting, see the next page.

1. To clear programmed data and user settings, from standby, press **MENU**, *****, **2**.



2. Press **[Enter]**.

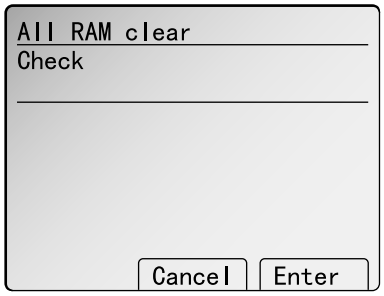
   Note: To finish the operation without performing initialization, press **[Cancel]**.

3.5 All RAM Clear

The All RAM Clear setting will erase all user programmed information, all documents in memory, and reset the memory switches and machine parameters to factory defaults.
This feature may also be used to try and clear a machine malfunction or lock up. If possible, when the All RAM Clear is used to reset a malfunction or lock up, it is advisable to print the machine settings, one-touch and speed dial listings to help in reprogramming this information.

Note: The All RAM Clear does not clear the machine parameters, life monitor and consumable order sheet. If you need to clear them, see “Clearing the machine parameters,” page 3-2 or “Clear Life Monitor,” page 3-140.

1. To perform an All RAM Clear, from standby, press **MENU**, *****, **3**.



2. Press **[Enter]**.

   Note: To finish the operation without performing RAM clear, press **[Cancel]**.

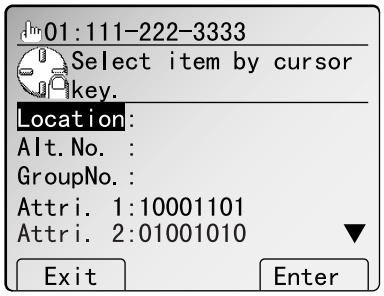
3.6 Setting Individual Autodialer Attributes

This function allows the user to configure an individual one-touch or speed dial entry with the settings shown in Memory Switches B:0, B:1, B:2 and B:3.

To set the individual attributes:

1. Change memory switch B:5, bit 7 to a “1”. (See setting 3.3.1 Setting the Memory Switches for more information on changing memory switch B:5.)

2. When the function is enabled, an “Attribute” option is added to the autodialer programming steps. As a one-touch or speed dial location is programmed, an extra step showing Attribute 1, Attribute 2, Attribute 3, and Attribute 4 are added as the last step.



3. Set the individual bit positions as shown in the following table. To change a setting, press ◄ or ► of the cursor key until the cursor is below the desired bit position; then press “**1”** or “**0”** to make the change.

4. Press **[Enter]** to save the setting and advance to the next attribute.

5. To set the other attribute, repeat steps 3-4.

6. If you want to set other autodialer's attribute, press **[Exit]** and select desired autodialer, then repeat steps 3-4.
   If you want to finish this operation, press **RESET** to return to standby.

Attribute 1 - Individual Autodialer Setting (Equivalent to Memory Switch B:0)

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Busy tone detection 0: No 1: Yes	Sets this switch to "0" if the ring tone of remote unit is mistaken for a busy signal.
6	0	Fallback pattern (bps) 2400 4800 7200 9600 14400 Set at 0: 2 times 2 times 2 times 2 times 2 times Set at 1: 4 times 1 times 1 times 1 times 1 times	
5	0	Overseas mode 0: No 1: Yes	Re-enables echo suppression that is disabled by the CED signal (2100 Hz). Also ignores the first DIS signal and transmits the DCS signal in response to the second DIS signal.
4	0	V.29 Echo Protect tone 0: No 1: Yes	International telephone lines equipped with echo suppression will cut the beginning portion of the transmitted information which may cause the receiver not to receive the training and data. To protect the received image from degrading, a 0.5 second Echo Protect tone is placed prior to the training using G3 high speed modem training (V.29).
3	1	Maximum transmit speed (kbps)	
2	1	2.4 4.8 7.2 9.6 12 14.4 16.8 19.2 21.6 24 26.4 28.8 31.2 33.6	
1	0	0 0 0 0 0 0 0 0 1 1 1 1 1 1	
0	1	0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1	

Attribute 2 - Individual Autodialer Setting (Equivalent to Memory Switch B:1)

Switch	Initial Setting	Adjust	Usage/Comments
7	0	The time between reception of CFR and transmission of data When CFR and data overlap due to line echo, increase the interval between CFR and data transmission using this switch.	
6	1	250 ms 500 ms 750 ms 1000 ms Switch 7 0 0 1 1 Switch 6 0 1 0 1	
5	0	Interval between DCS and TCF When FTT is received after DCS and TCF signals due to line echo, increase the interval between DCS and TCF signals using this switch.	
4	0	75 ms 300 ms 450 ms 600 ms Switch 5 0 0 1 1 Switch 4 0 1 0 1	
3	1	Output attenuation	See table on next page
2	0		
1	0		
0	1		

Output attenuation when individual autodialer attributes are set.

Switch	-15 dB	-14 dB	-13 dB	-12 dB	-11 dB	-10 dB	-9 dB	-8 dB	-7 dB	-6 dB	-5 dB	-4 dB	-3 dB	-2 dB	-1 dB	-0 dB
3	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
2	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

Attribute 3 - Individual Autodialer Setting **(Equivalent to Memory Switch B:2)**

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Data signaling rate (DCS) 0: V.17 1: V.33	Determines communication protocol.
6	0	Forced received print when transmitting from memory 0: No 1: Yes	Will force a remote Muratec machine with memory receive capabilities to print directly. This switch will prevent a memory overflow error at the remote unit.
5	0	Changing the date format of the transmitted TTI 0: No 1: Yes	When set to “1”, the machine changes the date format of the transmitted TTI from MM:DD:YY, or vice versa.
4	1	TTI transmit 0: No 1: Yes	When set at “0”, transmission of the TTI is disabled. (Note: Turning TTI transmission off may violate local or federal regulations.)
3	0	ECM response time 0: 3 sec 1: 4.8 sec	The time limit to receive the response signal for the ECM post message.
2	0	ECM error retransmit time 0: 200 ms 1: 400 ms	The time limit before the ECM error is retransmitted.
1	0	Interval between DIS and DCS	
0	0	0 ms 500 ms 1000 ms 1500 ms Switch 1 0 0 1 1 Switch 0 0 1 0 1	

Attribute 4 - Individual Autodialer Setting **(Equivalent to Memory Switch B:3)**

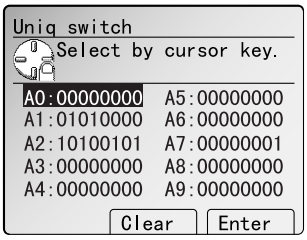
Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Retransmit automatically when receiving RTN/PIN signals 0: Yes 1: No	When set to “1”, retransmission disables automatically if receiving RTN/PIN signals.
2	1	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

3.7 Unique Switch Adjustment

3.7.1 Setting the Unique Switches

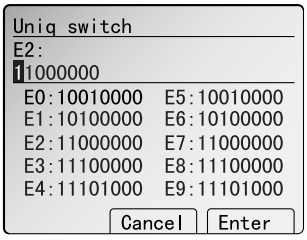
These switches are used to program internal machine parameters. The primary back up battery maintains these settings if power is lost.

1. From standby, press **MENU**, *****, **4**.



2. Select the desired unique switch by cursor key or by pressing a one-touch key plus a number on the keypad. For example, to access unique switch B:1, press one-touch “B” plus the number “1” on the numeric keypad.

3. Press **[Enter]**.



4. To navigate through the unique switch settings:

- Press ◄ or ► of the cursor key to move the cursor.
- Press **0** or **1** on the numeric keypad to change the bit value.
- Press **[Enter]** to save the setting of the displayed unique switch and advance to the next unique switch.
- Press **[Cancel]** *not* to save the setting of the displayed unique switch.

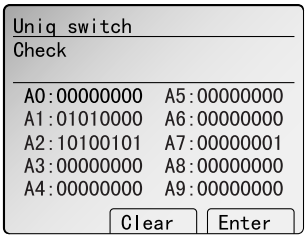
5. If you want to set other unique switches, repeat step 3-5. Otherwise, proceed to step 6.

6. Press **RESET** to return the machine to standby.

3.7.2 Clearing the Unique Switches

Resets the unique switches to factory defaults.

1. From standby, press **MENU, *, 4, [Clear]**.



3. Press **[Enter]**. The unique switches will reset to factory defaults.

Note: To finish the operation without clearing the unique switches, press **[Cancel]**.

Unique Switch a:0 — Dialer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	1	Congestion tone detection 0: No 1: Yes	Setting this switch to “0” ignores telephone line congestion tones.
5	0	Ring back tone wait time (seconds) 3.0 3.3 3.6 3.9	Sets the time until the ring back tone begins after answering an incoming call in the Fax/Tel Ready or Tel/Fax Ready mode.
4	0	Switch 5: 0 0 1 1 Switch 4: 0 1 0 1	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	1	Factory use only	

Unique Switch a:1 ~ a:9 — Factory use only

Unique Switch b:0 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	1	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	1	The number of times PPR is detected during ECM transmission 1 time 2 times 3 times 4 times	
0	1	0 0 1 1 0 1 0 1	

Unique Switch b:1 ~ b:4 — Factory use only

Unique Switch b:5 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	The length of the communication failure report in Relay broadcast (unique) 0: A4 1: No limit	Determine the length of the communication failure report in Relay broadcast. **Note:** This is available only when you set Unique Switch i:3 bit 7 to "1".
4	0	Send the result of Relay broadcast (unique) to the sender unit when the communication failure occurred 0: No 1: Yes	Send the information of the unit which had a communication failure in Relay broadcast to the sender unit. **Note:** This is available only when you set Unique Switch i:3 bit 7 to "1".
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

Unique Switch b:6 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Available *, # and space upon *F-code* box registration 0: No 1: Yes	Determines if the * (asterisk), # (sharp) and space are available upon *F-code* box registration.
6	1	Available *, # and space upon *F-code* communicating 0: No 1: Yes	Determines if the * (asterisk), # (sharp) and space are available upon *F-code* communicating.
5	0	Ignore space in *F-code* ID 0: Yes 1: No	Determines if checking the space stored in the *F-code* ID.
4	1	F-code sub-frame off 0: Send 1: Not send	Do not send the sub-address and password of F-code box when a point of sending DCS signal after EOM signal.
3	0	Send F-code box's TTI 0: No 1: Yes	Transmit the sub-address and box name of F-code box with F-code polling document.
2	0	Factory use only	
1	0	Retrieve document 0: No 1: Yes	Retrieve the document received in F-code SecureMail box by polling transmission.
0	1	Ignore F-code bit 0: No 1: Yes	Neglect SEP bit of DTC signal or SUB bit of DCS signal at F-code polled transmission.

Note: The "F-code communication" is possible the SecureMail and Polling operation using the F-code (SUB/SEP/PWD/SID). However, it is not based on T.33 recommendation.

Unique Switch b:7 — Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	1	JBIG transmission 0: No 1: Yes	Determines if the JBIG transmission is available.
0	0	Factory use only	

Unique Switch b:8 - Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Transmission when disable to detect first NSF in feeder transmission. 0: Retry to detect NSF 1: Transmit with the standard protocol	Determines the action when disable to detect first NSF in feeder transmission.

Unique Switch b:9 — Factory use only

Unique Switch c:0 - Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	1	MMR storage 0: No 1: Yes	Determines if the MMR storage is available.
4	1	Transmit CED signal when manual/remote receive 0: No 1: Yes	Determines if sending CED signal at on-hook transfer.
3	1	Pseudo-ring start time (seconds) 5 6 8 10	Sets the time the pseudo-ring begins after answering an incoming call. (Fax/Tel Ready or Tel/Fax Ready mode only.)
2	0	Switch 3: 0 0 1 1 Switch 2: 0 1 0 1	
1	1	Print a page completed to receive during receiving into memory 0: No 1: Yes	Determines if printing a page which completed to receive the data during receiving it into fax's memory.
0	1	Avoid time out in ECM reception 0: No 1: Yes	Disables 60 seconds RNR time out in ECM mode.

Unique Switch c:1 - Reception

<table>
<tr><th>Switch</th><th>Initial Setting</th><th>Adjust</th><th>Usage/Comments</th></tr>
<tr><td>7
6
5
4</td><td>0
1
1
0</td><td>T1 timer adjustment</td><td>When the machine switches to fax by on-hook transfer, the machine will seize the telephone line and attempt to handshake.

Switch 7 5 6 4 Settings
0 0 0 0 0 s
0 0 0 1 1 s
0 0 1 0 2 s
0 0 1 1 3 s
0 1 0 0 4 s
0 1 0 1 5 s
<u>0 1 1 0 6 s ← Initial setting</u>
0 1 1 1 7 s
1 0 0 0 8 s
1 0 0 1 9 s
1 0 1 0 10 s
1 0 1 1 11 s
1 1 0 0 12 s
1 1 0 1 13 s
1 1 1 0 14 s
1 1 1 1 15 s</td></tr>
<tr><td>3
2
1
0</td><td>1
0
1
0</td><td>TCF check time
(in 100 ms units)</td><td>If the TCF time is such that poor image quality is the result, lengthen the TCF check time.

Switch 3 2 1 0 Time
0 0 0 0 0 ms
0 0 0 1 100 ms
0 0 1 0 200 ms
0 0 1 1 300 ms
0 1 0 0 400 ms
0 1 0 1 500 ms
0 1 1 0 600 ms
0 1 1 1 700 ms
1 0 0 0 800 ms
1 0 0 1 900 ms
<u>1 0 1 0 1000 ms ← Initial setting</u>
1 0 1 1 1100 ms
1 1 0 0 1200 ms
1 1 0 1 1300 ms
1 1 1 0 1400 ms
1 1 1 1 1500 ms</td></tr>
</table>

Unique Switch c:2 - Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	1	JBIG reception 0: No 1: Yes	Determines how documents from the remote fax are received.
2	0	Receive the junk fax 0: Yes 1: No	When the block junk fax feature was set to Mode 2 and the fax does not receive the TSI signal from the remote fax, determines if receiving the fax other than the remote fax number set to the block junk dial list.
1	0	Print the communication failure report with your unit in Relay broadcast 0: No 1: Yes	When set to “1”, not only the sender unit but also your unit prints the communication failure report in Relay broadcast.
0	0	Call request when remaining memory size is small 0:No 1:Yes	Setting this switch to “1” prompt call request to transmitter when remaining memory size is small after receiving the document which not the last page.

Unique Switch c:3 - Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Number of seconds pseudo-ring rings (seconds) 30 40 50 60 Switch 1: 0 0 1 1 Switch 0: 0 1 0 1	Sets the length of time the pseudo-ring rings.
0	0		

Unique Switch c:4 ~ c:9 — Factory use only

Unique Switch d:0 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	1	3429 baud symbol rate when communicating at V.34 0: No 1: Yes	If the error frame often occurs because of the symbol rate is too high, setting this switch to “1” mask that symbol rate and keep down the occurrence of error frame.
4	1	3200 baud symbol rate when communicating at V.34 0: No 1: Yes	
3	1	3000 baud symbol rate when communicating at V.34 0: No 1: Yes	
2	1	2800 baud symbol rate when communicating at V.34 0: No 1: Yes	
1	0	Factory use only	
0	1	2400 baud symbol rate when communicating at V.34 0: No 1: Yes	See above (switch 5 to 2).

Unique Switch d:1 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Forced 2400 symbol rate when probing SNR is adverse	SNR means that Signal Noise Ratio. If the SNR is less than the threshold you set, the modem overrides the bandwidth evaluation algorithm and forces the symbol rate to2400 baud.
6	0		
5	0		
4	0		
3	1		
2	1		
1	1		
0	1		

Unique Switch d:2 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	1	V8 handshake in feeder Tx 0: No 1: Yes	Determine if the handshaking will be done with V.8 recommendation in feeder transmission.
6	0	Factory use only	
5	0	Factory use only	
4	1	Factory use only	
3	0	Factory use only	
2	1	ANSam output time 0: 3 sec 1: 4 sec	The time limit to output the ANSam (A sinewave signal at 2100 Hz amplitude-modulated). Sets to “1” when the V.8 handshake is hard to achieve.
1	0	Factory use only	
0	1	Factory use only	

Unique Switch d:3 ~ d:6 — Factory use only

Unique Switch d:7 - Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	The delay before post-message is transmitted	If retraining occurs due to the low reception signal level and few delay of the telephone line, it may overlap the second post-message. In this case, increase the delay before the post-message is transmitted. 0 ms 100 ms 200 ms 300 ms Switch 4: 0 0 1 1 Switch 3: 0 1 0 1
3	0		
2	0	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

Unique Switch d:8 ~ d:9 — Factory use only

Unique Switch e:0 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	1	Transmit a small document at center 0: No 1: Yes	When set to “1”, the image will transmit at center even when you put the small document along the edge.
5	0	Scanning standard point of ADF 0: Front left 1: Rear left	When set to “0”, the document is scanned from the front left point and the rear part can be missed in the case that the image is larger than the recording paper. When set to “1”, the front part can be missed.
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	1	Hyper fine resolution 0: No 1: Yes	When set to “1”, Super fine resolution (203 dpi × 392 lpi) changes into Hyper fine resolution (406 dpi × 392 lpi).

Unique Switch e:1

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Set the fixed ratio for copy and the auto ratio in detail 0: No 1: Yes	When set to “1”, the ratio will be calculated in detail automatically according to the document size and the recording paper size.
6	1	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	1	Factory use only	
2	0	Rotate B5 ▭ document and store it as B5 ▯ 0: Not rotate 1: Rotate	This is available when the rotate transmission is set to ON.
1	0	Rotate A5 ▭ document and store it as A5 ▯ 0: Not rotate 1: Rotate	This is available when the rotate transmission is set to ON.
0	1	Rotate A4 ▯ document and store it as A4 ▭ 0: Not rotate 1: Rotate	This is available when the rotate transmission is set to ON.

Unique Switch e:2 ~ e:5 — Factory use only

Unique Switch e:6 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Left edge document margin adjustment upon scanning using FBS Adjusts the left edge margin when scanning document by FBS. Each setting changes by 0.4233 mm.	Switch 5 4 3 2 1 0 Settings 0 0 0 0 0 0 0 mm 0 0 0 0 0 1 0.42 mm 0 0 0 1 0 1 2.11 mm 0 0 1 0 1 0 4.23 mm 0 0 1 1 1 1 6.35 mm 0 1 0 1 0 0 8.42 mm 0 1 1 0 0 1 10.58 mm 0 1 1 1 1 1 12.70 mm 1 0 0 0 1 1 14.83 mm 1 0 1 0 0 0 16.93 mm 1 0 1 1 0 1 19.05 mm 1 1 0 0 1 0 21.17 mm 1 1 0 1 1 1 23.28 mm 1 1 1 1 0 0 25.40 mm 1 1 1 1 1 1 26.67 mm
4	0		
3	0		
2	0		
1	0		
0	0		

Unique Switch e:7 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Right edge document margin adjustment upon scanning using FBS Adjusts the right edge margin when scanning document by FBS. Each setting changes by 0.4233 mm.	Switch 5 4 3 2 1 0 Settings 0 0 0 0 0 0 0 mm 0 0 0 0 0 1 0.42 mm 0 0 0 1 0 1 2.11 mm 0 0 1 0 1 0 4.23 mm 0 0 1 1 1 1 6.35 mm 0 1 0 1 0 0 8.42 mm 0 1 1 0 0 1 10.58 mm 0 1 1 1 1 1 12.70 mm 1 0 0 0 1 1 14.83 mm 1 0 1 0 0 0 16.93 mm 1 0 1 1 0 1 19.05 mm 1 1 0 0 1 0 21.17 mm 1 1 0 1 1 1 23.28 mm 1 1 1 1 0 0 25.40 mm 1 1 1 1 1 1 26.67 mm
4	0		
3	0		
2	0		
1	0		
0	0		

Unique Switch e:8 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Leading edge document margin adjustment upon scanning using FBS Adjusts the leading edge margin when scanning document by FBS. Each setting changes by 1 mm.	Switch 5 4 3 2 1 0 Settings 0 0 0 0 0 0 0 mm 0 0 0 0 0 1 1 mm 0 0 0 0 1 0 2 mm 0 0 0 0 1 1 3 mm 0 0 0 1 0 0 4 mm 0 0 0 1 0 1 5 mm 0 0 0 1 1 0 6 mm 0 0 0 1 1 1 7 mm 0 0 1 0 0 0 8 mm 0 0 1 0 0 1 9 mm 0 0 1 0 1 0 10 mm 0 0 1 0 1 1 11 mm 0 0 1 1 0 0 12 mm 0 0 1 1 0 1 13 mm 0 0 1 1 1 0 14 mm 0 0 1 1 1 1 15 mm 0 1 0 0 0 0 16 mm 0 1 0 0 0 1 17 mm 0 1 0 0 1 0 18 mm 0 1 0 0 1 1 19 mm 0 1 0 1 0 0 20 mm 0 1 0 1 0 1 21 mm 0 1 0 1 1 0 22 mm 0 1 0 1 1 1 23 mm 0 1 1 0 0 0 24 mm 0 1 1 0 0 1 25 mm : : 1 1 1 1 1 1 63 mm
4	0		
3	0		
2	0		
1	0		
0	0		

Unique Switch e:9 - Scanner

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Trailing edge document margin adjustment upon scanning using FBS Adjusts the trailing edge margin when scanning document by FBS. Each setting changes by 1 mm.	Switch 5 4 3 2 1 0 Settings 0 0 0 0 0 0 0 mm 0 0 0 0 0 1 1 mm 0 0 0 0 1 0 2 mm 0 0 0 0 1 1 3 mm 0 0 0 1 0 0 4 mm 0 0 0 1 0 1 5 mm 0 0 0 1 1 0 6 mm 0 0 0 1 1 1 7 mm 0 0 1 0 0 0 8 mm 0 0 1 0 0 1 9 mm 0 0 1 0 1 0 10 mm 0 0 1 0 1 1 11 mm 0 0 1 1 0 0 12 mm 0 0 1 1 0 1 13 mm 0 0 1 1 1 0 14 mm 0 0 1 1 1 1 15 mm 0 1 0 0 0 0 16 mm 0 1 0 0 0 1 17 mm 0 1 0 0 1 0 18 mm 0 1 0 0 1 1 19 mm 0 1 0 1 0 0 20 mm 0 1 0 1 0 1 21 mm 0 1 0 1 1 0 22 mm 0 1 0 1 1 1 23 mm 0 1 1 0 0 0 24 mm 0 1 1 0 0 1 25 mm : : 1 1 1 1 1 1 63 mm
4	0		
3	0		
2	0		
1	0		
0	0		

Unique Switch f:0 - Printer

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Factory use only	
6	0	Smoothing of List print in normal printing 0: No 1: Yes	Smoothes the data scanned in each resolution mode.
5	1	Smoothing in S-Fine rotate printing 0: No 1: Yes	
4	1	Smoothing in Normal rotate printing 0: No 1: Yes	
3	1	Smoothing in H-Fine (400 x 400 dpi) mode 0: No 1: Yes	
2	1	Smoothing in S-Fine (200 x 400 dpi) mode 0: No 1: Yes	
1	1	Smoothing in Fine mode 0: No 1: Yes	
0	1	Smoothing in Normal mode 0: No 1: Yes	

Unique Switch f:1 - Printer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	1	Factory use only	
1	1	Factory use only	
0	0	Print reduction 0: No 1: Yes	If the document size is different from the recording paper size in the paper cassette: When set to “0”, print the image at 100 % size on two or more pages. When set to “1”, reduce printout to fit on one sheet.

Unique Switch f:2 - Printer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printing margin adjustment.	Switch 76543210 Settings
6	0		
5	1	Each setting changes	00000000 0 mm
4	0	by 0.1 mm.	00000001 0.1 mm
3	1		:
2	0		00101000 4.0 mm ← Initial setting
1	0		:
0	0		00110010 5.0 mm
			:
			00111100 6.0 mm
			:
			01000110 7.0 mm
			:
			01010000 8.0 mm
			:
			01011010 9.0 mm
			:
			01100100 10.0 mm
			:
			11001000 20.0 mm
			:
			11111111 25.5 mm

Unique Switch f:3 — Printer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Printer contrast adjustment.	Switch 76543210 Settings
6	0		
5	0		00000000 Not available
4	0		00000001 Lightest
3	0		00000010 :
2	1		00000011 :
1	0		00000100 Normal ← Initial setting
0	0		00000101 :
			00000110 :
			00000111 Darkest
			00001000 Not available
			: ↓

Unique Switch f:4 ~ f:7 — Factory use only

Unique Switch f:8- Printer

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Number of the available pages to print after appearing the replace message of the toner or the drum.	Switch 76543210 Settings 00000000 0 page 00000001 1 page : 00110010 50 pages : 01100100 100 pages ← Initial setting : 10010110 150 pages : 11001000 200 pages : 11111111 255 pages
6	1		
5	1		
4	0		
3	0		
2	1		
1	0		
0	0		

Unique Switch f:9 — Factory use only

Unique Switch g:0 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Use numeric keypad on the fax using second phone 0: No 1: Yes	Determines if using the numeric keypad on the control panel of the fax using the second phone.
1	1	Manual transmit/receive using Start key after off-hook of second phone 0: No 1: Yes	Determines if transmitting or receiving manually using Start key after off-hook of the second phone.
0	0	Silent detection 0: No 1: Yes	Enables or disables silent detection during Ans/Fax Ready mode.

Unique Switch g:1 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Flash key On/Off time	Sets the flash time when the Soft key that programmed flash function is pressed. Switch 7 6 5 4 3 2 1 0 Time 0 0 0 0 0 0 0 0 0 ms 0 0 0 0 0 0 0 1 10 ms 0 0 0 0 0 0 1 0 20 ms ⋮ 0 0 0 1 1 1 1 0 300 ms 1 1 1 1 1 1 0 0 2520 ms 1 1 1 1 1 1 0 1 2530 ms 1 1 1 1 1 1 1 0 2540 ms 1 1 1 1 1 1 1 1 2550 ms
6	0		
5	0		
4	1		
3	1		
2	1		
1	1		
0	0		

Unique Switch g:2 — Factory use only

Unique Switch g:3 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	1	Expand the setting range of the number of the receiving rings to 15 times 0: No 1: Yes	When set to “1”, you can set the number of the receiving rings within 15 times.

Unique Switch g:4 - Remote reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Load 24V to TEL 2 line 0: No 1: Yes	When set to “1”, 24 V will be loaded to TEL 2 in communication. **Note:** Set to “1” in g:4 bit 0 when make this feature available.
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Set the relay of TEL 2 in Silent receiving 0: On 1: Off	When set to “1”, TEL 2 does not ring in the silent receiving.

Unique Switch g:5 ~ g:6 — Factory use only

Unique Switch g:7 – Remote reception and TAD interface

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Strict condition of CNG detection after OGM output 0: No 1: Yes	When set at “1”, the condition of CNG detection becomes strict. CNG should be detected 2times continuously and the OFF time should be 2~4 sec.
4	0	CNG detection during OGM output in ANS Ready 0: Yes 1: No	
3	0	Number of detection DTMF	Sets the number of detection the DTMF during Ans/Fax Ready mode. Switch 3 2 1 0 Number of detection 0 0 0 0 Not detect 0 0 0 1 1 0 0 1 0 2 0 0 1 1 3 Initial setting 0 1 0 0 4 0 1 0 1 5 0 1 1 0 6 0 1 1 1 7 1 0 0 0 8 1 0 0 1 9 1 0 1 0 10 ⋮ 1 1 1 1 15
2	0		
1	1		
0	1		

Unique Switch g:8 ~ g:9 — Factory use only

Unique Switch h:0 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	LCD error message 0: Remains in LCD 1: Returns to standby	After an error message has printed, the setting of this switch determines if the error message will remain in the display.
5	1	Buzzer/keypad volume OFF Low Medium Maximum 0 0 1 1 0 1 0 1	
4	0		
3	1	Factory use only	
2	0	Priority mode 0: Copy mode 1: Fax mode	Determine if Copy mode or Fax mode appears when the machine returns to standby with auto reset. **Note:** It is also available when turn the machine on.
1	0	Factory use only	
0	0	Factory use only	

Unique Switch h:1 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Line monitor in Quick memory transmission 0: On 1: Off	
6	0	Factory use only	
5	1	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Secure RX document to polling document 0: No 1: Yes	Retrieve the document received in the SecureMail box by polling transmission.
1	0	RX document to polling document 0: No 1: Yes	Retrieve the document received in the memory by polling transmission.
0	0	Factory use only	

Unique Switch h:2 — Factory use only

Unique Switch h:3 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Print consumable order sheet (drum) 0: No 1: Yes	When the drum cartridge has reached its design life, print the consumable order sheet out.
5	0	Print consumable order sheet (toner) 0: No 1: Yes	When the toner cartridge is empty, print the consumable sheet out.
4	0	Factory use only	
3	1	Continuous polling daily 0: One day 1: Every days	Set a time limit for continuous polling.
2	0	F-code Rx message print 0: Yes 1: No	Print message when the document received in the F-code box.
1	1	Factory use only	
0	0	Factory use only	

Unique Switch h:4 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	When the Department code feature in ON, it affect to the manual reception 0: No 1: Yes	When this switch set to “1”, the machine asks department code when one using the manual reception.
4	0	When the Department code feature in ON, it affect to the manual transmission 0: No 1: Yes	When this switch set to “1”, the machine asks department code when one using the manual transmission.
3	0	Factory use only	
2	1	Priority of consumable order sheet printing 0: Print after the current printing job completed 1: Print immediately	When the drum cartridge has reached its design life, or the toner cartridge is empty, the machine prints a consumable order sheet (see unique switch H:3). When this switch is set at “0”, the machine not print consumable order sheet until the current printing job is finished.
1	0	Print the transmission time on TCR 0: Blank 1: Print the transmit time	When set to “1”, the transmission time will be printed on TCR.
0	0	Factory use only	

Unique Switch h:5 - Operation

Switch	Initial Setting	Adjust	Usage/Comments
7	0	The time for the Auto power off mode (0 sec. to 7 sec.)	The machine will be in the Auto power off mode after keeping to press the Energy saving key for the time you set here. Switch 76543210 Settings 00000000 0 sec. 00000001 1 sec. 00000010 2 sec. 00000011 3 sec.← Initial setting 00000100 4 sec. 00000101 5 sec. 00000110 6 sec. 00000111 7 sec. **Note:** When set it to 0 sec., the machine will be in the Auto power off mode immediately without being in the Sleep mode after pressing the Energy saving key.
6	0		
5	0		
4	0		
3	0		
2	0		
1	1		
0	1		

Unique Switch h:6 ~ i:2 — Factory use only

Unique Switch i:3 - Miscellaneous

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Relay broadcast (Unique) 0: Not available 1: Available	
6	0	Database polling Unique) 0: Not available 1: Available	
5	0	SecureMail transmission (Unique) 0: Not available 1: Available	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

Unique Switch i:4 ~ i:6 — Factory use only

Unique Switch i:7 - Miscellaneous

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	Factory use only	
3	0	Factory use only	
2	0	Factory use only	
1	0	Factory use only	
0	0	Print last 25-digit of remote number on TCR 0: No 1: Yes	Determines if printing the "• •", followed by the last 25-digit of remote number on TCR, when the remote number exceeded the ability of its column on TCR.

Unique Switch i:8 ~ j:9 — Factory use only

3.8 Print Program Mode List

This mode causes the machine to print a summary list of the machine's programming modes. To print the program mode list press **MENU, *, 8**. After printing, the machine will return to standby.

3.9 Test Modes

This mode offers the ability to print a test pattern and monitor certain unit output functions. Included are followings.

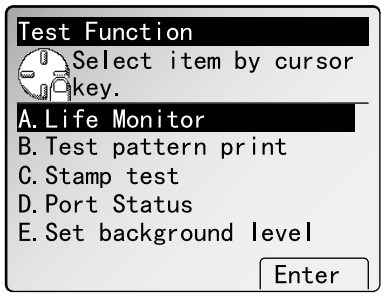
A. Life monitor
B. Test pattern print
C. Stamp test
D. Port status (*Factory use only*)
E. Background level

3.9.1 Life Monitor

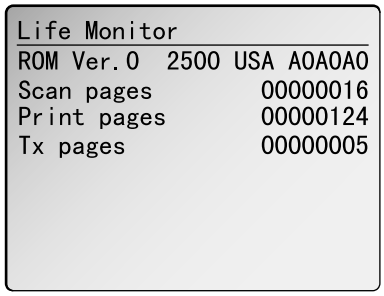
The life monitor displays the current software version and the total number of pages scanned, printed, and transmitted.

Note: The All RAM Clear setting does not clear the life monitor. To clear, see next column.

1. From standby mode, press **MENU, *, 9.**

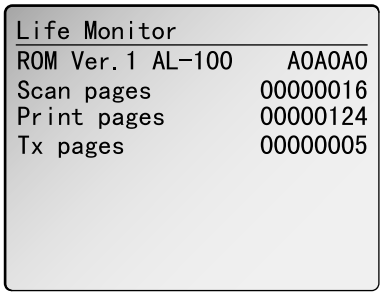


2. Select **"A. Life Monitor"**, then press **[Enter].**
   The software version will be shown on the top line of the LCD.



3. Press optional board number using the numeric keypad as shown in the following table.

Software version	Numeric keypad
• Flash ROM on Main control PCB	0
• Built-in CPU ROM	* (asterisk)
• The first optional kit	1
• The second optional kit	2
• The third optional kit	3

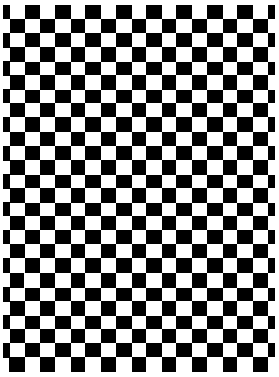


4. Press **RESET** to exit and return to the standby mode.

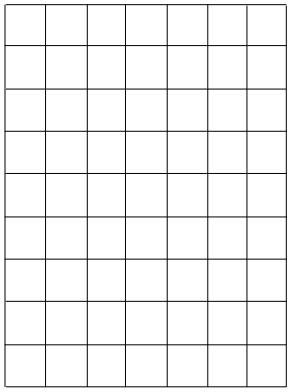
3.9.2 Printer Test

The Printer Test mode offers three different test patterns as shown below.

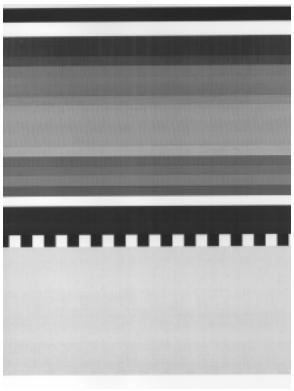
Pattern A



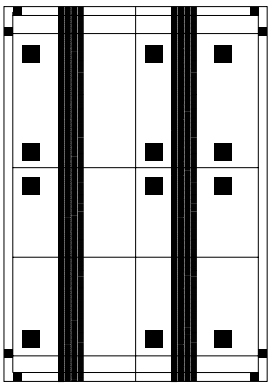
Pattern B



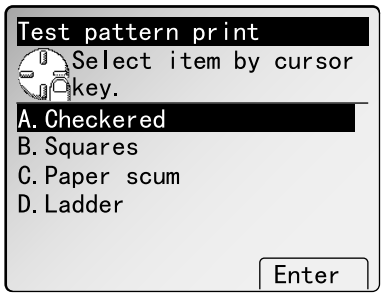
Pattern C



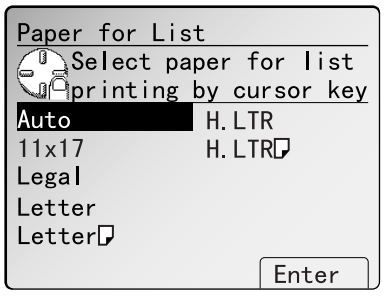
Pattern D



1. Press **MENU, *, 9**.
2. Select **“B. Test Pattern Print”** by cursor key, then press **[Enter]**.



3. Select the desired test pattern by cursor key, then press **[Enter]**.



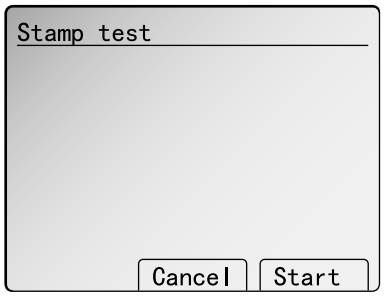
4. Select the paper to print by cursor key.
5. Press **[Enter]**. The selected pattern will print continuously.

   Note: Press **STOP** to cancel the printing.
6. Press **STOP** to finish printing and return to standby.

3.9.3 Stamp Test

This mode tests the operation of the stamp.

1. Insert one sheet of paper into the document feeder of the machine.
2. Press **MENU, *, 9.**
3. Select **“C. Stamp Test”** by cursor key, then press **[Enter]**.



4. Press **[Start].** The page will be stamped while it is fed through the document feeder.

   Note: To finish the operation without performing the stamp test, press **[Cancel]**.
5. Press **STOP** to return to standby.

3.9.4 Port Status

This test mode is not applicable to field service of this machine.

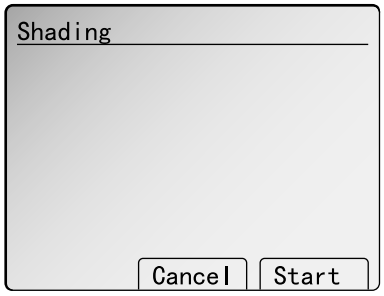
3.9.5 Set Background Level

The background level is an established threshold used to help measure the reflective ability of a scanned document. This threshold can change if the scanner lamp, CCD, or the ballast is replaced; therefore this mode should be used to reset the threshold when these items are changed.
The Set Background Level mode allows the level to be set without erasing memory contents.

Note: The background seal at the inside of the scanner cover should be cleaned prior to setting the background level to ensure an accurate reading.

1. Press **MENU, *, 9.**

2. Select **"E. Background Level"** by cursor key, then press **[Enter]**.



3. Press **[Start]**. After setting, the machine will return to standby.

   Note: To finish the operation without setting the background level, press **[Cancel]**.

3.10 Print Machine Parameters, Memory Switch and Unique Switch Settings

This function instructs the machine to print a list of the machine parameter, memory switch and unique switch settings. The list shows the default and current settings for each. To print it, press **MENU, *, A.** After printing, the machine will return to standby.

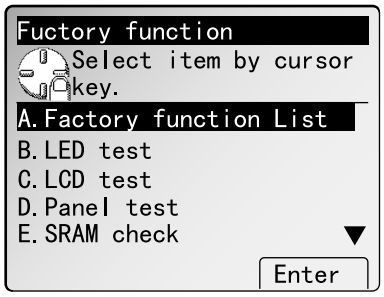
3.11 Factory Functions

This factory functions provide several machine testes. Included are followings.

A. Factory functions list
B. LED test
C. LCD test
D. Panel test
E. SRAM check
F. DRAM check
G. RTC test
H. Adjustment of DS2
I. Page memory check
J. RS-232C test (optional RS-232C port required)

3.11.1 Function List

1. Press **MENU**, *****, **B**.

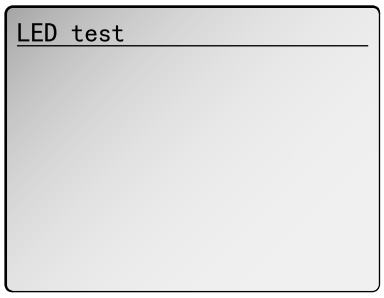


2. Select **"A. Factory function List"** by cursor key, then press **[Enter]**.
   A list of the Factory functions will be printed. After printing, the machine will return to standby.

3.11.2 LED Test

1. Press **MENU**, *****, **B**.

2. Select **"B. LED test"** by cursor key, then press **[Enter]**.



3. Pressing **MENU**, toggle between All LEDs turn on and off.

4. Press **RESET** to return to standby.

3.11.3 LCD Test

This mode displays two test patterns in LCD.

1. Press **MENU**, *****, **B**.

2. Select **"C. LCD test"** by cursor key, then press **[Enter]**.

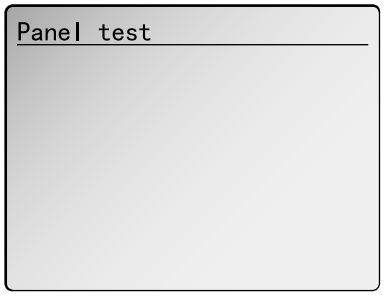
3. Pressing **MENU**, toggle between all dots on the LCD turn on and off.

4. Press **RESET** to return to standby.

3.11.4 Panel Test

1. Press **MENU**, *****, **B**.

2. Select **"D. Panel test"** by cursor key, then press **[Enter]**.



3. As each button on the keypad is pressed, a representative name as show in the following table will be displayed.

Key	Indication in LCD	Key	Indication in LCD
DOCUMENT RESOLUTION	Doc.Type	Numeric keys (0 ~ 9, *, #)	0 ~ 9, *, #
CONTRAST	Contrast	RESET	Reset
RESOLUTION	Mode	STOP	Stop
REDUCE/ENLARGE	Ratio	SPEED DIAL/ TEL INDEX	Speed Dial
COPY	Copy	REVIEW COMANDS	Review
FAX	Fax	INTERRUPT	Interrupt
Select function key (Left/Center/Right)	SoftKey L SoftKey C SoftKey R	START	Start
NEXT	Next	MACRO PROGRAM	Macro
ENERGY SAVING	EcoMode	M1 ~ M6	M01 ~ M06
Cursor key (Up/Down/Left/Right)	Cursor U Cursor D Cursor L Cursor R	SOFT KEY	SoftKey 1 ~ SoftKey 4
MENU	Menu	One-touch keys (01 ~ 84)	01 ~ 84

4. Press **RESET** to return to standby.

3.11.5 SRAM Check

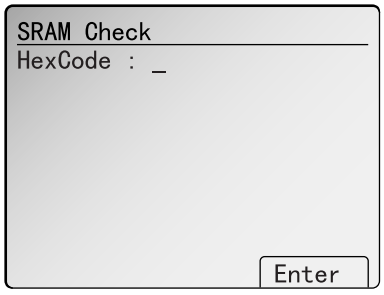
This mode is used to test the SRAM memory where user programmed parameters such as date, time, TTI, etc are stored.

Note: When this test is executed, All RAM Clear will be performed by the machine.

The All RAM Clear erases all user settings and resets all memory switches, machine parameters and unique switches to factory defaults.

1. Press **MENU**, *****, **B**.

2. Select **"E. SRAM Check"** by cursor key, then press **[Enter]**.



3. Enter the HEX code (00 ~ FF), then press **[Enter]**.
   The HEX code is written to, then read from, memory. After that, the result (OK/NG) will be shown in the display. Then the machine will return to standby.

3.11.6 DRAM Check

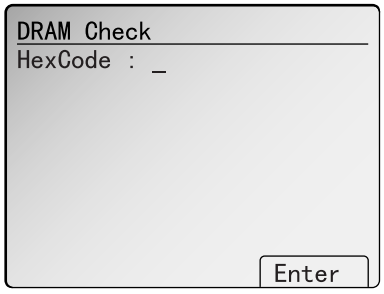
This mode is used to test the DRAM memory, or document memory.

Note: When this test is performed, All DRAM Clear will be performed by the machine. The All RAM clear erases all user settings and resets all memory switches, machine parameters and unique switches to factory defaults.
This is a read/write test that requires a few moments to complete.

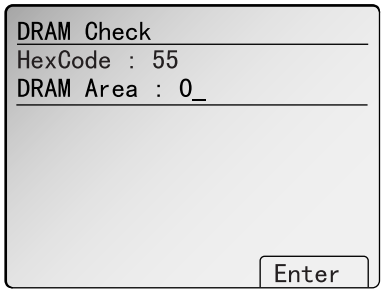
Note: Perform a DRAM test whenever a memory upgrade is added to the machine.

1. Press **MENU**, *****, **B**.

2. Select **"F. DRAM Check"** by cursor key, then press **[Enter]**.



3. Enter the HEX code (00 ~ FF), then press **[Enter]**.

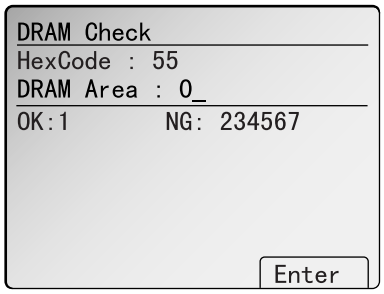


4. Enter the Check area (0 ~ 7).

   Note: Usually, enter “0”.

   Check area:
   0: All DRAMs
   1: The DRAM installed on the main PCB
   2: The second DRAM
   3: The third DRAM
   4: The fourth DRAM
   5: The fifth DRAM
   6: The sixth DRAM
   7: The seventh DRAM

5. Press **[Enter]**. The machine starts checking and the result(OK/NG) will be shown in the display.
   For example, if the check area is “0” and no additional memory, you will see:



6. If you want to check other DRAMs, press **STOP** and repeat steps 3-5.
   Otherwise, press **RESET** to return to standby.

3.11.7 RTC(real time clock) Test

This test mode is not applicable to field service of this machine.

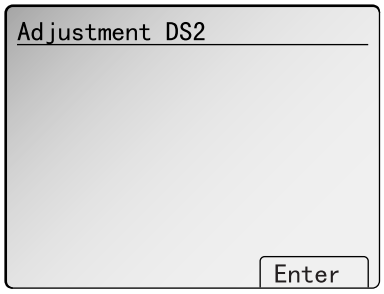
3.11.8 DS2 Self adjustment mode

When you change the sensor of DS2, adjust the sensitivity of it here.

Note: Close the ADF and remove the documents before performing this mode.

1. Press **MENU**, *****, **B**.

2. Select **“H. Adjustment of DS2”** by cursor key, then press **[Enter]**.



3. Press **[Enter]**. The machine starts checking and the result(OK/NG) will be shown in the display.

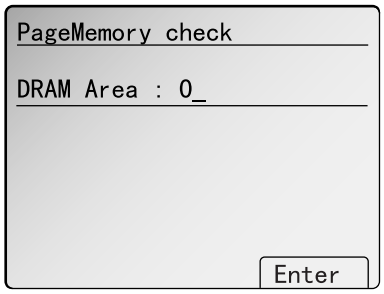
4. If NG is shown in the display, check the sensor and the inside of the ADF.
   Otherwise, press **RESET** to return to standby.

3.11.9 Page memory check

When the letters are not printed correctly, perform this test.

1. Press **MENU**, *****, **B**.

2. Select **"I. Page memory check"** by cursor key, then press **[Enter]**.



3. Enter the Check area (0 - 6).

   Note: Usually, enter "0".

   Check area:
   0: All DRAMs
   1: The Page memory installed on the main PCB
   2: The second Page memory
   3: The third Page memory
   4: The fourth Page memory
   5: The fifth Page memory
   6: The sixth Page memory

5. Press **[Enter]**. The machine starts checking and the result(OK/NG) will be shown in the display.
   If NG is shown, perform the DRAM clear (page 3-139), and then go back to step 1.

6. If you want to check other Page memory, press **STOP** and repeat steps 3-5.
   Otherwise, press **RESET** to return to standby.

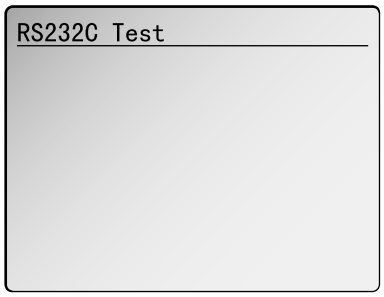
3.11.10 RS-232C Test

This mode is used to return back test of the optional RS-232C port.

1. Connect a special return back test connector with RS-232C interface connector.

2. Press **MENU**, *****, **B**.

3. Select **"J. RS-232C Test"** by cursor key, then press **[Enter]**.



4. Enter **One-touch G, H, or I**, depending on the kind of test. Please refer to the following table:

G: return back test
H: send from fax to PC
I: receive from PC to fax

The results are shown in the display.
If the test is successful, the display will show “OK”
If the test is failed, the display will show “NG”.

5. Press **RESET** to return to standby.

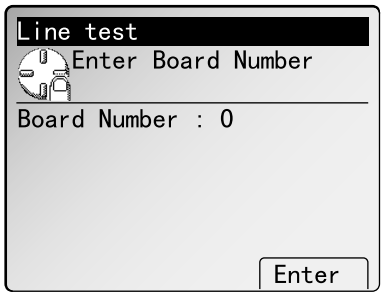
3.12 Line Tests

This mode offers several internal tests and ability to monitor certain unit output functions. Included are relay tests, modem signal output monitoring, and DTMF output monitoring.

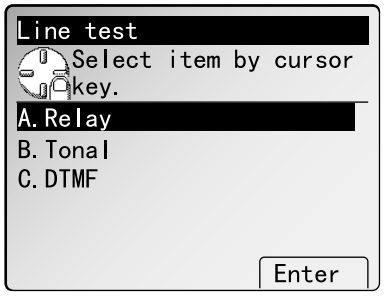
3.12.1 Relay Test

This mode tests the on/off operation of various relays and switches.

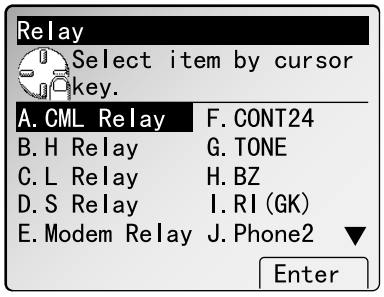
1. Press **MENU**, *****, **C**.



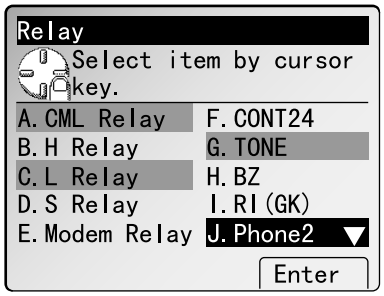
2. Press the numeric keypad 0 (zero) to select the optional board number for the machine.
To select the optional board number for the second phone line, press 1 (one).
Then press **[Enter]**.



3. Select **“A. Relay”** by cursor key, then press **[Enter]**.



4. Select the relay you want to set to ON by cursor key, then press **[Enter]**. When it is set to ON, it will be shaded. If you want to set it to OFF, press **[Enter]** again.



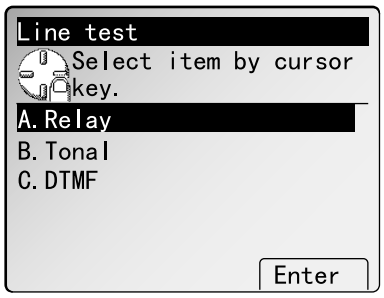
5. Press **RESET** to return to standby.

3.12.2 Tonal Signal Test

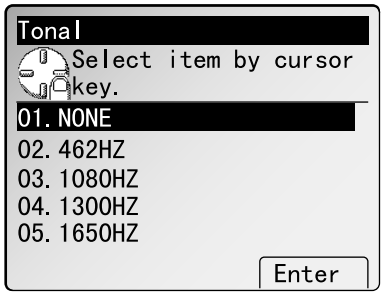
The tonal signal test permits the machine's output tones to be monitored.

Note: To monitor the tones, an external monitoring device must be connected to the telephone line jack.

1. Press **MENU**, *****, **C**.
2. Press the numeric keypad 0 (zero) to select the optional board number for the machine.
   To select the optional board number for the second phone line, press 1 (one).
   Then press **[Enter]**.



3. Select **"B. Tonal"** by cursor key, then press **[Enter]**.



4. Select the desired tonal signal by cursor key. Refer to the following table.

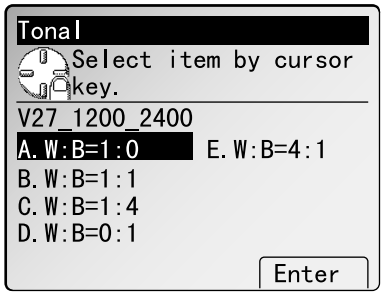
No.	Signal	No.	Signal
01	None (stop signal)	11	FSK black (all 1)
02	462 Hz tone	12	FSK White 1:Black 1
03	1080 Hz tone	13	V27_1200_2400 picture data
04	1300 Hz tone	14	V27_1600_4800 picture data
05	1650 Hz tone	15	V27_2400_7200 picture data
06	1700 Hz tone	16	V27_2400_9600 picture data
07	1800 Hz tone	17	V17_2400_7200 picture data
08	1850 Hz tone	18	V17_2400_9600 picture data
09	2100 Hz tone	19	V17_2400_12000 picture data
10	FSK white (all 0)	20	V27_2400_14400 picture data

No.	Signal
21 ~ 29	V34_2400_2400 ~ 21600
30 ~ 39	V34_2800_4800 ~ 26400
40 ~ 50	V34_3000_4800 ~ 28800
51 ~ 62	V34_3200_4800 ~ 31200
63 ~ 75	V34_34290_4800 ~ 33600

5. *When you select No.01 ~ No.12, No.21 ~ No.76:*
   Press **[Enter]**.
   The output signal will begin. To stop outputting the tonal signal, press **STOP**.

   When you select No.13 ~ No.20:
   Press **[Enter]**.

   Select the desired ratio of the white and black and press **[Enter]**.



   The output signal will begin. To stop outputting the tonal signal, press **STOP**.

6. To select another tonal signal, repeat steps 4-5.
   Otherwise, proceed to step 7.

7. Press **RESET** to return to standby.

3.12.3 DTMF Output Test

The DTMF output test permits the machine's DTMF tones to be monitored.

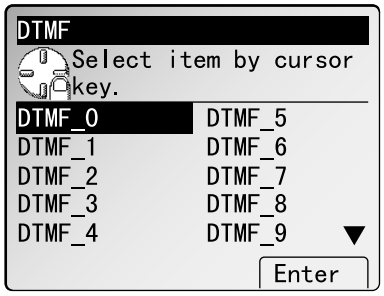
Note: To monitor the tones, an external monitoring device must be connected to the telephone line jack.

Signal	Signal
DTMF 0 (941 Hz + 1336 Hz)	ROW 1 (697 Hz)
DTMF 1 (697 Hz + 1209 Hz)	ROW 2 (770 Hz)
DTMF 2 (697 Hz + 1336 Hz)	ROW 3 (852 Hz)
DTMF 3 (697 Hz + 1477 Hz)	ROW 4 (941 Hz)
DTMF 4 (770 Hz + 1209 Hz)	COL 1 (1209 Hz)
DTMF 5 (770 Hz + 1336 Hz)	COL 2 (1336 Hz)
DTMF 6 (770 Hz + 1477 Hz)	COL 3 (1477 Hz)
DTMF 7 (852 Hz + 1209 Hz)	COL 4 (1633 Hz)
DTMF 8 (852 Hz + 1336 Hz)	
DTMF 9 (852 Hz + 1477 Hz)	
DTMF * (941 Hz + 1209 Hz)	
DTMF # (941 Hz + 1477 Hz)	

1. Press **MENU**, *****, **C**.

2. Press the numeric keypad 0 (zero) to select the optional board number for the machine.
   To select the optional board number for the second phone line, press 1 (one).
   Then press **[Enter]**.

3. Select **"C. DTMF"** by cursor key, then press **[Enter]**.



4. Select the desired DTMF tone by cursor key, then press **[Enter]**.
   The output signal will begin. To stop outputting the DTMF tone, press **STOP**.

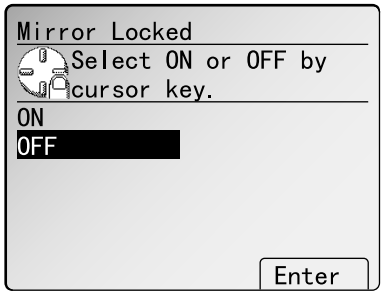
5. To select another DTMF tone, repeat step 4.
   Otherwise, proceed to step 6.

6. Press **RESET** to return to standby.

3.13 Mirror Carriage Transfer Mode

Important: The machine's mirror carriage is fixed using the two screws at transferring.
When installing the machine, remove the two mirror carriage mounting screws and turn the power on. Then perform this mode.

1. Press **MENU**, *****, **E.**



2. Select **"OFF"** by cursor key. Then press **[Enter]** to turn off the transport mode. The mirror carriage will move to home position.

Important: If reshipping, turn on this mode to move the mirror carriage to the transport position. Then power off and mount the mirror carriage using two transport screws.

3.14 Consumable order sheet

When the drum cartridge has reached its design life or the toner cartridge is empty, the machine prints the consumable sheet.

Note: This feature's default setting is OFF (not print the consumable sheet). (See Unique Switch H:3 to set ON this feature.)

3.14.1 Set and Print consumable order sheet

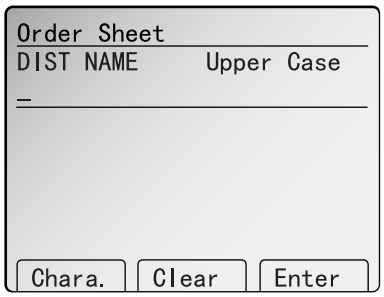
If using this feature, you should be enter following items:

- Distributor's code
- Distributor's name
- Customer's code
- Customer's name
- Customer's address
- Customer's phone number
- Printer serial number
- Scanner serial number

Here's how:

1. Clear the junk data, if necessary (see "Clear consumable order sheet," next page).

2. Press **MENU**, *****, **F.**



3. Enter the distributor's name. The name may be up to 30 characters in length.

   Use the one-touch keys to enter letters and other non-numeric characters.
   The word "Upper case" means the machine will enter only upper-case letters. If you press **R**, the machine will see it as an **R** (not an **r**).

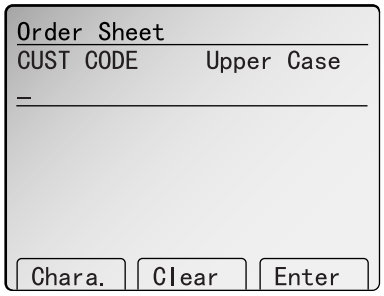
   To type a lower-case letter, press **[Chara.]** and select "Lower case" by using the cursor key, and then press **[Enter]**. This means pressing one-touch keys will enter lower-case letters: pressing **R** will produce an **r** (not an **R**) on the display.

   To switch back for upper-case entries, press **[Chara.]**.

   To enter spaces, punctuation and symbols, use the one-touch keys.

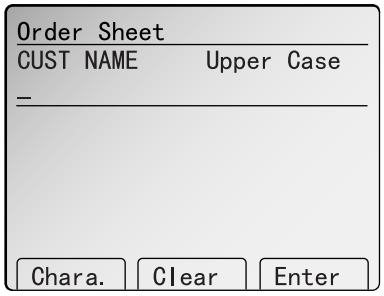
   Note: If you make a mistake, press **[Clear]** to erase the left.
   To change just one character, move the cursor by cursor key.
   Press **[Clear]** to erase the character. Then re-enter the character correctly.

4. Press **[Enter]** to save the distributor's name and continue. The LCD will show:



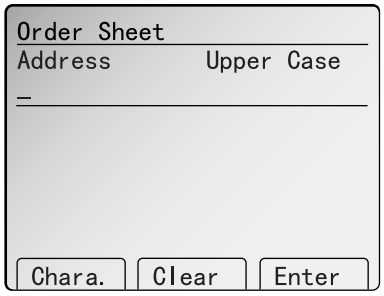
Enter the customer's code. The customer's code may be up to 10 characters in length.

5. Press **[Enter]** to save the customer's code and continue. The LCD will show:



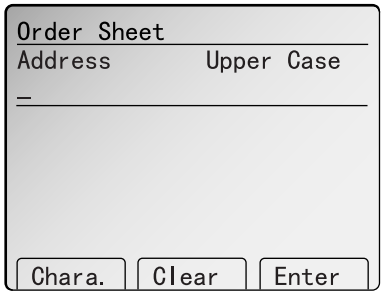
Enter the customer's name. The customer's name may be up to 30 characters in length.

6. Press **[Enter]** to save the customer's name and continue. The LCD will show:



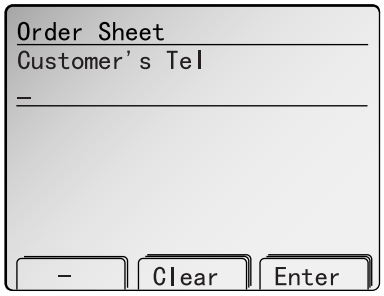
Enter the customer's address for the upper row. The customer's address may be up to 30 characters in length.

7. Press **[Enter]** to save the customer's address for the upper row and continue. The LCD will show:



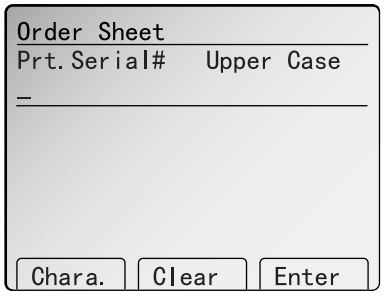
Enter the customer's address for the lower row. The customer's address may be up to 30 characters in length.

8. Press **[Enter]** to save the customer's address. The LCD will show:



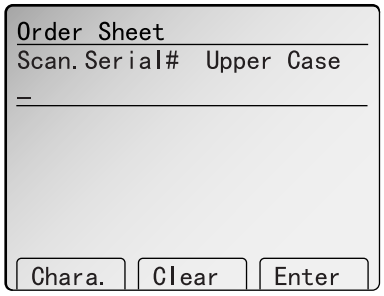
Enter the customer's phone number. The phone number may be up to 20 characters in length.

9. Press **[Enter]** to save the customer's phone number and continue. The LCD will show:



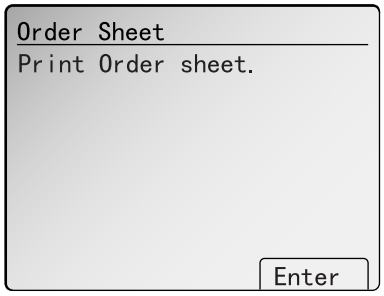
Enter the printer's serial number. The number may be up to 18 characters in length.

10. Press **[Enter]** to save the printer's serial number and continue. The LCD will show:



Enter the scanner's serial number. The number may be up to 18 characters in length.

11. Press **[Enter]** to save the scanner's serial number. The LCD will show:

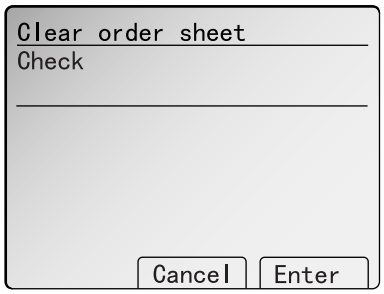


13. Press **[Enter]** to print the consumable order sheet.
    To finish the operation without printing, press **RESET**.

3.14.2 Clear consumable order sheet

The consumable order sheet keeps several items. These are **not** cleared with the all RAM clear function (**MENU**, *, 3). To clear the information of consumable order sheet:

1. Press **MENU**, *****, **L.**

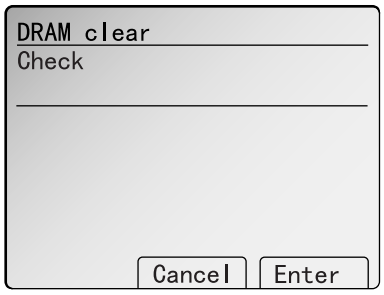


2. To clear the information of the consumable order sheet, press **[Enter].**
   To finish the operation without clearing, press **[Cancel]**.

3.15 DRAM Clear

Note: Perform a DRAM clear whenever a memory upgrade is installed to the machine or the DRAM is replaced.

1. Press **MENU, *, G**.



2. Press **[Enter]**. The DRAM will be cleared.

Note: To finish the operation without performing initialization, press **[Cancel]**.

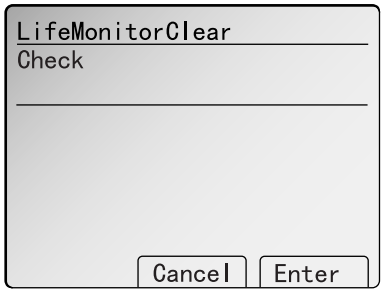
3. After clearing, turn the power OFF and ON.

3.16 Clear Life Monitor

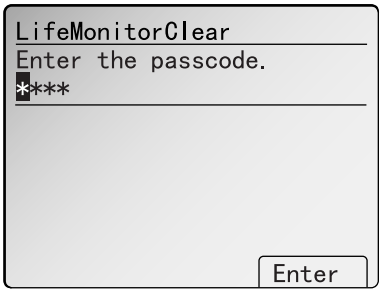
The life monitor keeps a count of the pages scanned, printed, and transmitted. This mode clears these counters.

1. Press **MENU**, *****, **H.**

2. If the passcode is set, enter the passcode and press **[Enter]**.
   Otherwise, proceed to step 3.



or



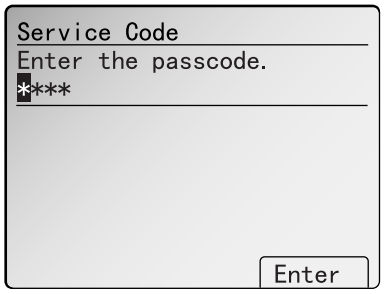
3. Press **[Enter]**. The counters will be reset and the machine will return to standby.

Note: To finish the operation without performing initialization, press **[Cancel]**.

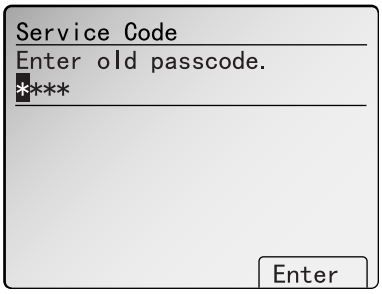
3.17 Set Service Code

This is the code which, one can protect the life monitor clear operation. If it is not necessary to protect to the life monitor clear operation, abort this operation without entering the passcode.

1. Press **MENU**, *****, **J**.



or



2. If you will modify the passcode, enter the old passcode and press **[Enter]**.
   If you will set the passcode for the first time, proceed to step 3.

3. Enter the desired four-digit numbers for the new passcode.

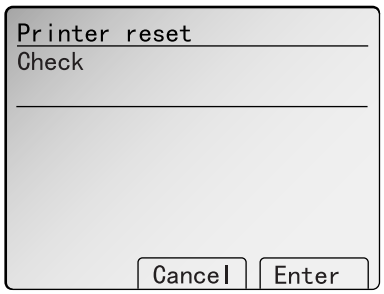
4. Press **[Enter]**.

Note: To set the passcode at off and return to normal life monitor clear (not protect), change the code to 0000 by repeating steps 1-4 and entering 0000 in step 3.

3.18 Printer Trouble Reset

This mode clears the service call. Perform this operation after solved the trouble.

1. Press **MENU**, *****, **M.**



2. Press **[Enter]**. The service call will be cleared and the machine will return to standby.

Note: To finish the operation without performing clearing, press **[Cancel]**.

3.19 Clear Optional Data

This mode clears all data and all activity journals for optional RS-232C, Printer controller and second phone line.

1. Press **MENU**, *****, **I.**

2. Press **[Enter]**. The optional data will be cleared.

Note: To finish the operation without performing initialization, press **[Cancel]**.

3.20 JP1, JP2 Battery Backup

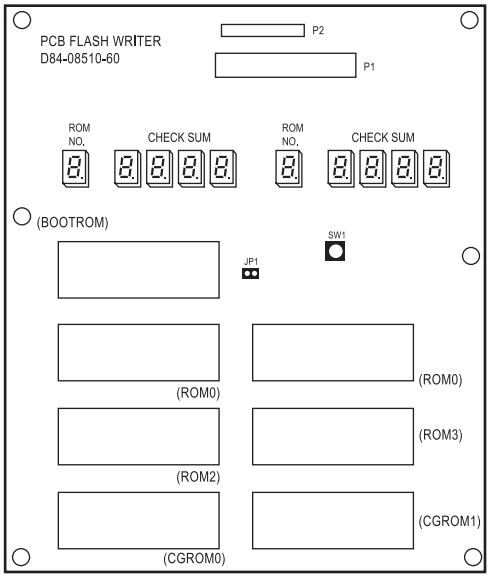
Jumper JP2 on the main control PCB is used for battery back-up of the DRAM. Any documents stored in DRAM. Removing JP2 will initialize the DRAM. If the power is turned off, the battery will provide up to 1 week of back-up when fully charged.

Jumper JP1 on the main control PCB is used for battery back-up of the SRAM. All user programmed data and internal machine parameter, memory switch and unique switch settings are held in SRAM. Removing JP1 will initialize the SRAM. If the power is turned off, the battery will provide up to five years of back-up when fully charged.

3.21 Update the software

Here's instruction to update the software version of the Flash ROM.

Important: To update the software, it needs the flash ROM writer and six (or four) of the latest versions of EP-ROMs — ROM0, ROM1, ROM2, ROM3, CGROM0 and CGROM1.



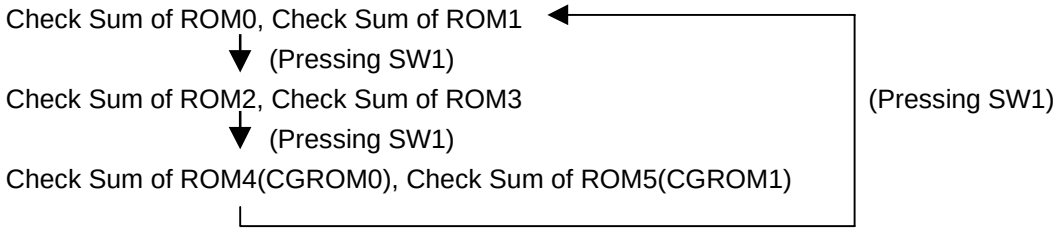
1. Turn off the power switch.
2. If you will update six ROMs (ROM0 – CGROM1), set JP1 to ON.
   If you will update only four ROMs (ROM0 - ROM3), set JP1 to OFF.
   And confirm the BOOTROM is set correctly.
3. If you will update CGROMs, set the six ROMs to the Flash ROM writer.
   If you will *not* update CGROMs, set the four ROMs (ROM0, ROM1, ROM2 and ROM3) to the Flash ROM writer.

   Note: Be careful of the direction of the ROMs when you attach them.
4. Remove the ROM cover and connect the cables as follows:
   Flash ROM writer Main control PCB
   P1 <----------> P6
   P2 <----------> P7
5. Turn the power on.
   "0" will be indicated on the right ROM NO. and "1" will be on the left ROM NO.
   Dots will be lighted on the CHECK SUMs.
6. The Flash ROM writer erases the current program in the machine, then starts writing the new program to the machine.

   Note: The CGROM0 is indicated as "4" and the CGROM1 is "5".

7. At the end of this operation (it takes a few minutes), the Flash ROM writer indicates the Check Sums of the last ROMs.

8. Pressing the SW1, confirm the Check Sums as follows:


Check Sum of ROM0, Check Sum of ROM1
(Pressing SW1)
Check Sum of ROM2, Check Sum of ROM3
(Pressing SW1)
Check Sum of ROM4(CGROM0), Check Sum of ROM5(CGROM1)
(Pressing SW1)

If the Check Sum indicated on the Flash ROM writer and the one written on the ROM are not same, confirm the cable connection and the ROM attaching, then perform from step 1 again.

9. Turn off the power switch, then disconnect the cables.

10. (Re-attach the rear cover using the three screws.)

Error code

If the error occurred during writing, the following error code will be appeared:

E.02: Maker code read error

E.04: Sector erase error

E.05: Writing error

E.06: Sum check error

E.07: Time out error

When the above error occurred, turn off the power switch, confirm the cable connection and the ROM attaching, then perform from step 1 again.

Section4
Troubleshooting Procedures

4.1 Troubleshooting Outline

Before troubleshooting a unit check the following:

- Is the power cord correctly connected to the machine?
- Is the telephone handset and the telephone line cord connected correctly?
- Is there paper in the paper cassette?
- Are all covers closed correctly?

Before removing any portions of the machine or making any adjustments be sure the power cord is disconnected from the unit. Check the following:

- The power source should be rated according to unit specifications.
- The unit should not be connected to an electrical circuit with other equipment or where voltages may vary.
- The unit should be installed on a flat, level surface.
- The ambient temperature and relative humidity surrounding the unit should be 50°F to 95°F (10°C to 35 °C) at 15% to 85% humidity with no condensation.
- The unit should be located in a well ventilated area.
- The unit should receive necessary cleaning and maintenance.

The unit should be installed:

- Away from heat sources and heating or cooling vents.
- Away from water heaters, steam generators, humidifiers or other areas of high humidity.
- Away from dusty areas.
- Away from areas where chemical fumes or gasses are generated or may collect.
- Away from areas exposed to direct sunlight.

Check the consumable:

- Verify that the recording paper supply is adequate and that it is high- or standard-quality 20lb. xerographic bond.
- Verify that the recording paper has been stored away from moisture and damp areas.
- Verify that the recording paper has not been damaged in any way.

4.2 Document Feeder Jam

1. Verify the original documents conform to the specifications designed for use in the machine and that they are not damaged in any way.
2. Verify the number of documents placed into the feeder does not exceed its maximum capacity.
3. Verify the scanner cover is closed properly.
4. Remove any foreign substances from inside the scanner area.
5. Verify that all of the document feed rollers are clean and not damaged. Clean using a lint-free cotton cloth moistened with a cleaning solution designed for use on rubber rollers. Replace the rollers if worn or damaged.
6. Check the operation of DS1 at connector P122, pin 3-5, on the PCB connect ADF.
7. Check the operation of the separator roller, and the pick-up roller.
8. Verify the operation to the ADF Motor at connector P121, pins 1-6 on the PCB connect ADF.
9. Verify that the document feeds into the unit and stops. If the document does not stop, check the operation of DS2 at connector P123, pin 1-3, on the PCB connect ADF.
10. Check all connectors and cables.
11. Check the operation of the main control board.

4.3 Document Feeder Multi-feeding or Skew

Symptom: Two or more pages of a multi-page document are fed at once.
The document is fed on the skew. Slight skewing may sometimes occur.

Suggested corrective action:

1. Verify that the original documents conform to the specifications designed for use in the machine and they are not damaged in any way.
2. Verify the pages of the document are not stuck together from glue, wet or damp correction fluid, tape, etc.
3. Verify the feed roller, separator roller and retard roller are clean and not damaged. Clean using a lint-free cotton cloth moistened with a cleaning solution designed for on rubber rollers. Replace these items if worn or damaged.

4.4 Mirror Carriage Error

Symptom: The mirror carriage doesn't move.

Suggested corrective action:

1. Verify that the four transport screws have been removed. Remove four transport screws if they are not removed. Then press **MENU, ✻, E** to turn off the mirror carriage carry mode.
2. Verify that the timing belt doesn't out of joint.
3. Check the operation of HOME sensor at connector P165, pin 1-3, on the PCB LCDBL.
4. Check the operation of END sensor at connector P164, pin 7-9, on the PCB connect LCDBL.

4.5 Transmit Error

Symptom: Check message prints after attempting transmission.

Suggested corrective action:

1. Reference the error code on the check massage or the journal to the error code list contained in this section.

4.6 Transmit Black Lines

Symptom: A black line appears on all documents transmitted or copied.

Suggested corrective action:

1. Print a document from memory (mode list, journal, etc.) to determine if the problem is in the scanner. If the black line in not on the memory print outs, the problem is not in the scanner.
2. Check for a foreign object in the feeder.
3. Clean the contact glass or FBS glass.
4. Check for wire or other foreign object obstructing the light path to the CCD.

4.7 Cannot transmit

Symptom: The unit will not transmit

Suggested corrective action:

1. Verify the telephone line cord is properly installed and plugged into the correct type of wall jack.
2. Check for dial tone at the unit and wall jack. If no dial tone is present at the unit, check the NCU PCB.
3. Verify that the correct telephone number has been dialed or that the correct telephone number is programmed in the autodialer.
4. Insure Security TX turned off.
5. Place a call through the monitor and check for excessive noise or interference on the telephone line.
6. Verify that the remote location is capable of receiving by checking the following:
   6.1 Place a call to the remote machine and verify that if auto answers.
   6.2 Insure that the remote machine does not have closed network or block junk fax turned on.
   6.3 Transmit to another location.
7. Check the operation of NCU PCB and the main control PCB.

4.8 Receive Errors

Symptom: Check message prints after attempting a reception.

Suggested corrective action:

1. Reference the error code on the check message or the journal to the error code list contained in this section.

4.9 Will not Auto-Answer

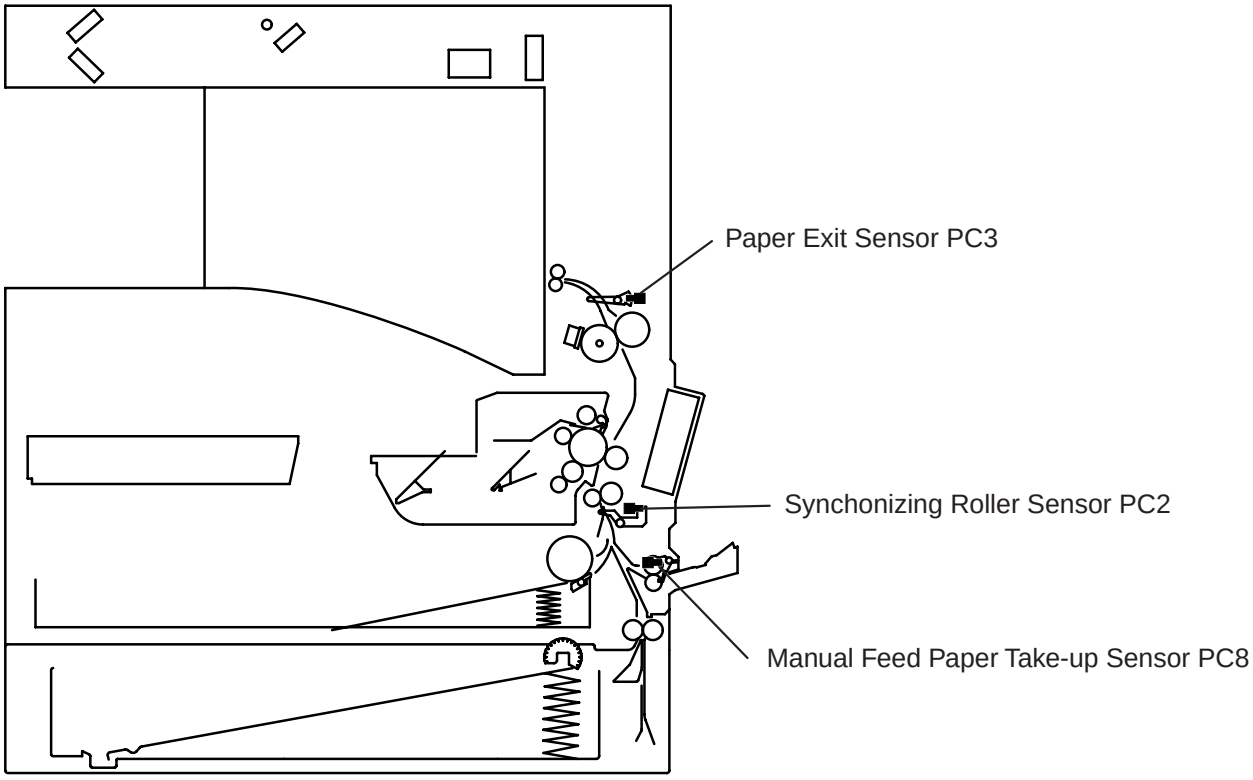
Symptom: The unit rights but will not auto-answer.

Suggested corrective action:

1. Check the power cord and AC switch.
2. Verify the telephone line is properly installed.
3. Verify recording paper in the paper cassette.
4. Check the memory capacity. The unit will not answer incoming calls if memory full.
5. Check the number of rings is set to answer on. If set to a high number of rings, the transmitting unit may “time out”.
6. Insure the unit is in the Fax Ready mode.
7. Check the operation of the NCU PCB and the main control PCB.

4.10 Recording paper misfeed

4.10.1 Misfeed detection sensor layoput



4.10.2 Types of Misfeed Detection and Detection Timings

- The following are the types of misfeed detection and detection timings for different misfeed locations.

Note: For misfeed detection types and detection timings of options, see the relevant option's information in the Section 6 on this service manual.

<Machine Take-Up Misfeed>

Type	Detection Timing	Timer Value T (sec.)
Paper take-up failure detection	• 1st Drawer paper take-up: Synchronizing Roller Sensor PC2 is not unblocked (H) even after the lapse of T sec. after Paper Take-Up Solenoid SL1 has been energized for the second paper take-up retry sequence.	1.28
	• 2nd Drawer paper take-up: PC2 is not unblocked (H) even after the lapse of T sec. after SL1 has been energized for the first paper take-up retry sequence.	2.27
	• 1st/2nd Drawer paper take-up: PC2 is unblocked (H) within T sec. after SL1 has been energized.	0.20

<Optional Manual Bypass Take-Up Misfeed>

Type	Detection Timing	Timer Value T (sec.)
Bypass paper take-up failure detection	PC2 is not unblocked (H) even after T sec. after Manual Feed Paper Take-Up Clutch CL3 has been energized.	0.89
	PC2 is unblocked (H) within T sec. after CL3 has been energized.	0.20
	Paper left Manual Feed Paper Take-Up Sensor PC8 is blocked (L) when the Power Switch is turned ON, CPU is reset, or cover is opened and closed.	———

<Separator Misfeed>

Type	Detection Timing	Timer Value T (sec.)
Leading edge detection by Paper Exit Sensor PC3	PC3 is not blocked (L) even after the lapse of T sec. after PC2 has been unblocked (H).	1.92 ✻
Trailing edge detection by Synchronizing Roller Sensor PC2	PC2 is not blocked (L) even after the lapse of T sec. after it has been unblocked (H).	4.20 ✻
	PC2 is blocked (L) within T sec. after it has been unblocked (H).	1.05
Paper is stationary	During a sequence of detecting a paper size based on the period of time between when Synchronizing Clutch CL1 is energized and when PC2 is blocked (L), the paper size detected is longer than the size data sent from the controller by +260 mm or more.	———
Size error detection	The paper size detected based on the period of time between when CL1 is energized and when PC2 is blocked (L) is more than the size data sent from the controller by ±20 mm or more.	———
Paper left	PC2 is unblocked (H) when the Power Switch is turned ON, CPU is reset, or cover is opened and closed.	———

✻ Excludes the period of time during which the paper is stationary before the Synchronizing Roller.

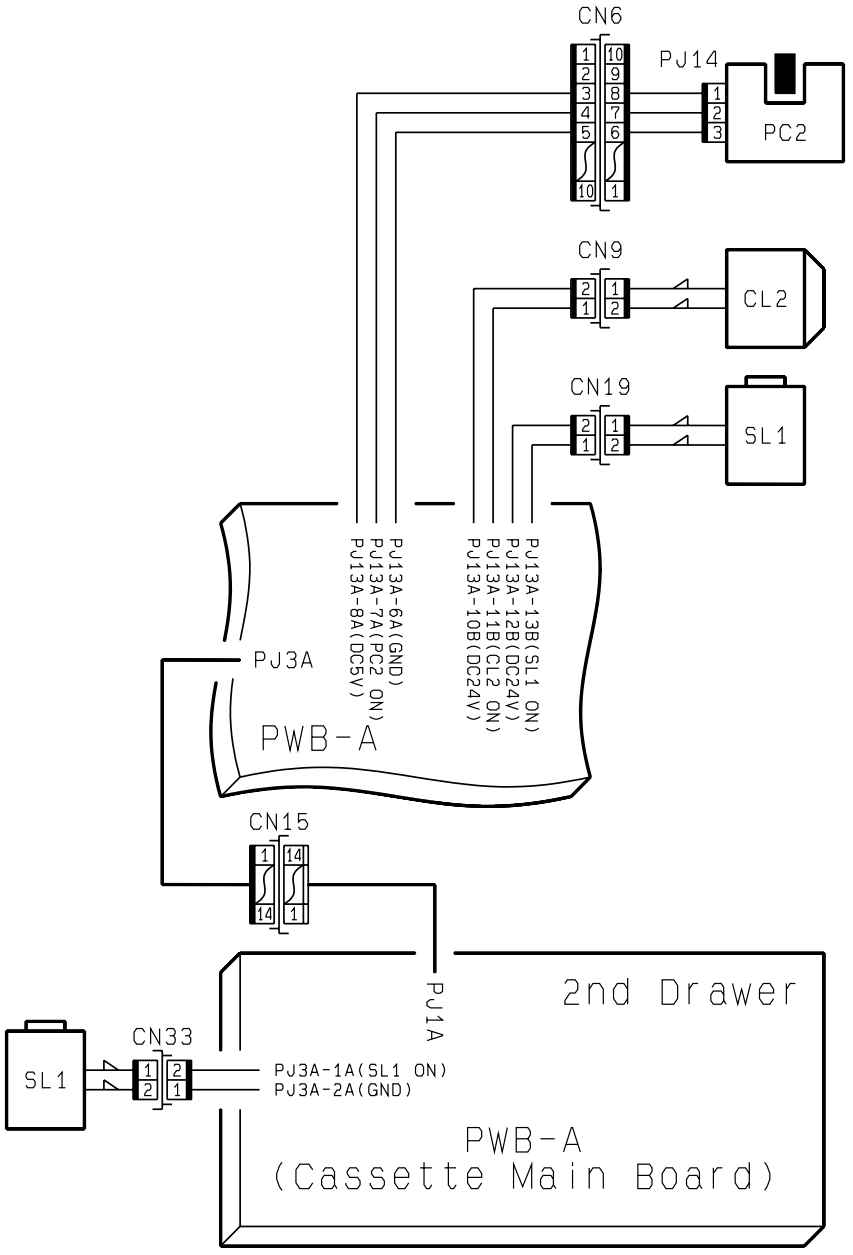
<Fusing Misfeed>

Type	Detection Timing	Timer Value T (sec.)
Trailing edge detection by Paper Exit Sensor PC3	PC3 is not unblocked (H) even after the lapse of T sec. after PC2 has been blocked (L).	1.96
Paper left	PC3 is blocked (L) when the Power Switch is turned ON, CPU is reset, or cover is opened and closed.	———

4.10.3 Misfeed Troubleshooting Procedures

(1) Machine Take-Up Misfeed

Relevant Electrical Parts	
Paper Take-Up Solenoid SL1 Synchronizing Roller Sensor PC2	Master Board PWB-A Cassette Main Board PWB-A

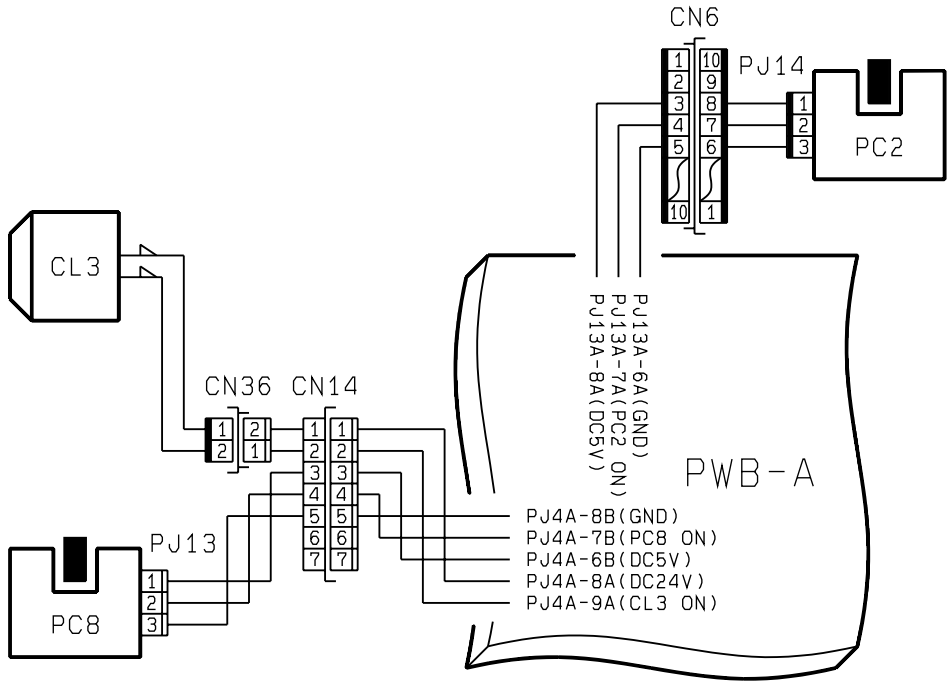


<Machine Take-Up Misfeed Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Paper is not taken up at all.	1	Does the paper being used meet the product specifications?	NO	Instruct the user to use the paper that meets product specifications.
	2	Is the paper curled, wavy, or damp?	YES	Change the paper. Instruct the user on the storage of paper.
	3	Are the Edge Guide and Trailing Edge Stop (of the drawer) positioned to the exact size of the paper used?	NO	Slide the guides to the exact size of the paper.
	4	Is the Paper Take-Up Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Take-Up Roll.
	5	If the Paper Lifting Plate dirty or deformed?	YES	Clean or change the Paper Lifting Plate.
	6	Has the misfeed been detected while the Multi Purpose Cassette was being used?	YES	Check steps 7 and 8.
			NO	Check steps 9 and onward.
	7	Is the Paper Separator Pad deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Separator Pad.
	8	Check SL1 for operation. Does the voltage across CN19-1 on the PWB-A side and GND change from DC24V to DC0V when the Start key is pressed?	YES	Check various parts for possible overload and, if they are okay, change SL1.
			NO	Change PWB-A.
	9	Is the Paper Separator Finger dirty or deformed?	YES	Clean or change the Paper Separator Finger.
	10	Check CL2 for operation. Does the voltage across CN9-1 on the PWB-A side and GND change from DC24V to DC0V when the Start key is pressed?	NO	Change PWB-A.
	11	Check SL1 for operation. Does the voltage across PJ3A-1A on PWB-A (Cassette Main Board) and GND change from LOW to HIGH when the Start key is pressed?	YES	Check various parts for possible overload and, if they are okay, change SL1 or CL2.
			NO	Change PWB-A (Cassette Main Board) or PWB-A.
• Paper is at a stop before the vertical transport section. • Paper is at a stop near the Synchronizing Rollers.	1	Is the Vertical Transport Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Vertical Transport Roller.
	2	If the Vertical Transport Guide Plate dirty or deformed?	YES	Clean or change the Vertical Transport Guide Plate.
	3	Is PC2 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change PWB-A.
			NO	Check the PC2 actuator for operation and, if it is intact, change PC2.

(2) Manual Bypass Take-Up Misfeed

Relevant Electrical Parts	
Manual Feed Paper Take-Up Clutch CL3 Synchronizing Roller Sensor PC2	Manual Feed Paper Take-Up Sensor PC8 Master Board PWB-A

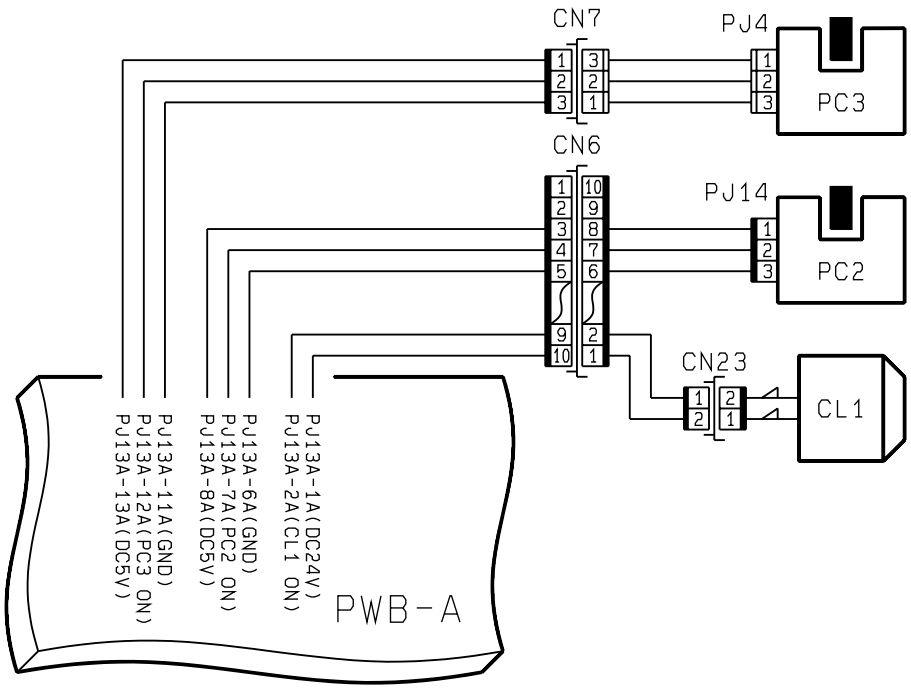


<Manual Bypass Take-Up Misfeed Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Paper is not taken up at all.	1	Does the paper being used meet the product specifications?	NO	Instruct the user to use the paper that meets product specifications.
	2	Is the paper curled, wavy, or damp?	YES	Change the paper. Instruct the user on the storage of paper.
	3	Is the Manual Feed Paper Take-Up Roller or Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Manual Feed Paper Take-Up Roller or Roll.
	4	Is PC8 fully operational? Check the input data using I/O Check.	NO	Check the PC8 actuator for operation and, if it is intact, change PC8.
	5	Check CL3 for operation. Does the voltage across CN14-2 and GND change from DC24V to DC0V when the misfeed condition is reset?	YES	Check various parts for possible overload and, if they are okay, change CL3.
			NO	Change PWB-A.
Paper is at a stop near the Synchronizing Rollers.	1	Is PC2 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change PWB-A.
			NO	Check the PC2 actuator for operation and, if it is intact, change PC2.

(3) Separator/Fusing Misfeed

Relevant Electrical Parts	
Paper Exit Sensor PC3	Synchronizing Clutch CL1
Synchronizing Roller Sensor PC2	Master Board PWB-A

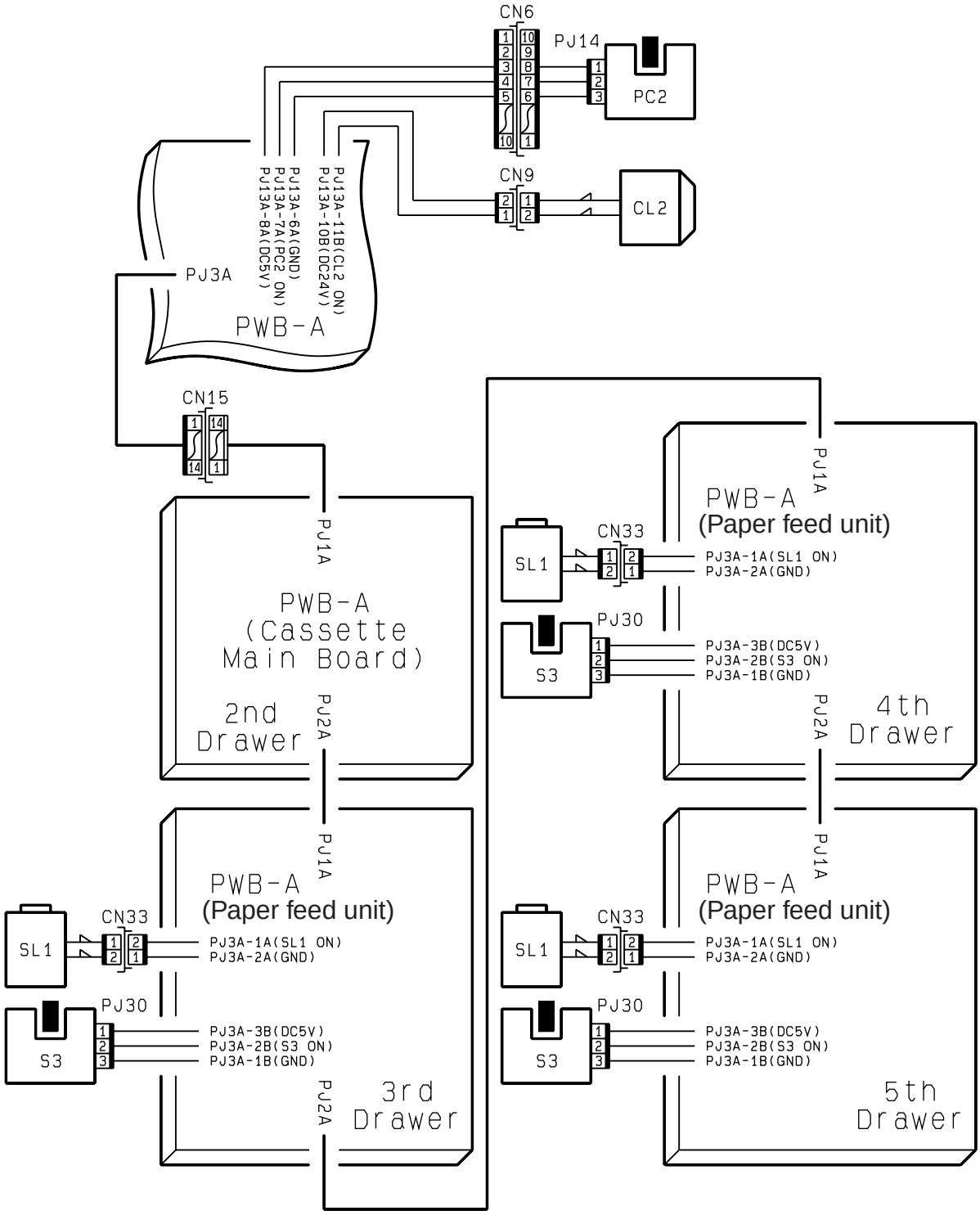


<Separator/Fusing Misfeed Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Paper is at a stop near the Synchronizing Rollers.	1	Are the Synchronizing Rollers deformed, worn, or dirty with paper dust?	YES	Clean or change the Synchronizing Rollers.
	2	Is a size error displayed when the misfeed display is reset?	YES	Check that the size of the paper actually loaded in the current paper source matches the size set for it.
	3	Is PC2 fully operational? Check the input data using I/O Check.	NO	Check the PC2 actuator for operation and, if it is intact, change PC2.
	4	Check CL1 for operation. Does the voltage across CN6-9 on the PWB-A side and GND change from DC24V to DC0V when the Start key is pressed?	YES	Check various parts for possible overload and, if they are okay, change CL1.
			NO	Change PWB-A.
Paper is at a stop near the PC Drum.	1	Is the Pre-Image Transfer Guide Plate dirty or deformed?	YES	Clean or change the guide plate.
	2	Is the Image Transfer Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Image Transfer Roller.
Paper is wedged at the PC Drum Paper Separator Fingers.	1	Are the PC Drum Paper Separator Fingers dirty or deformed?	YES	Clean or change the separator fingers.
			NO	Check the clearance between the PC Drum Paper Separator Fingers and PC Drum.
Paper is at a stop before the Fusing Rollers.	1	Is the Fusing Guide Plate dirty or deformed?	YES	Clean or change the Fusing Guide Plate.
Paper is at a stop at the Fusing Rollers.	1	Are the Fusing Rollers deformed, worn, or dirty with paper dust?	YES	Clean or change the Fusing Rollers.
	2	Are the Fusing Separator Fingers dirty or deformed?	YES	Clean, correct, or change the Fusing Separator Fingers.
Paper is at a stop at the exit section.	1	Is the Paper Exit Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Exit Roller.
	2	Is PC3 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change PWB-A.
			NO	Check the PC3 actuator for operation and, if it is intact, change PC3.

(4) Paper Take-Up/Transport Misfeed (Paper Feed Unit)

Relevant Electrical Parts	
Paper Take-Up Solenoid SL1	Master Board PWB-A
Take-Up Sensor S3	Cassette Main Board PWB-A
Synchronizing Roller Sensor PC2	Cassette Main Board PWB-A: Paper feed unit
Transport Clutch CL2	

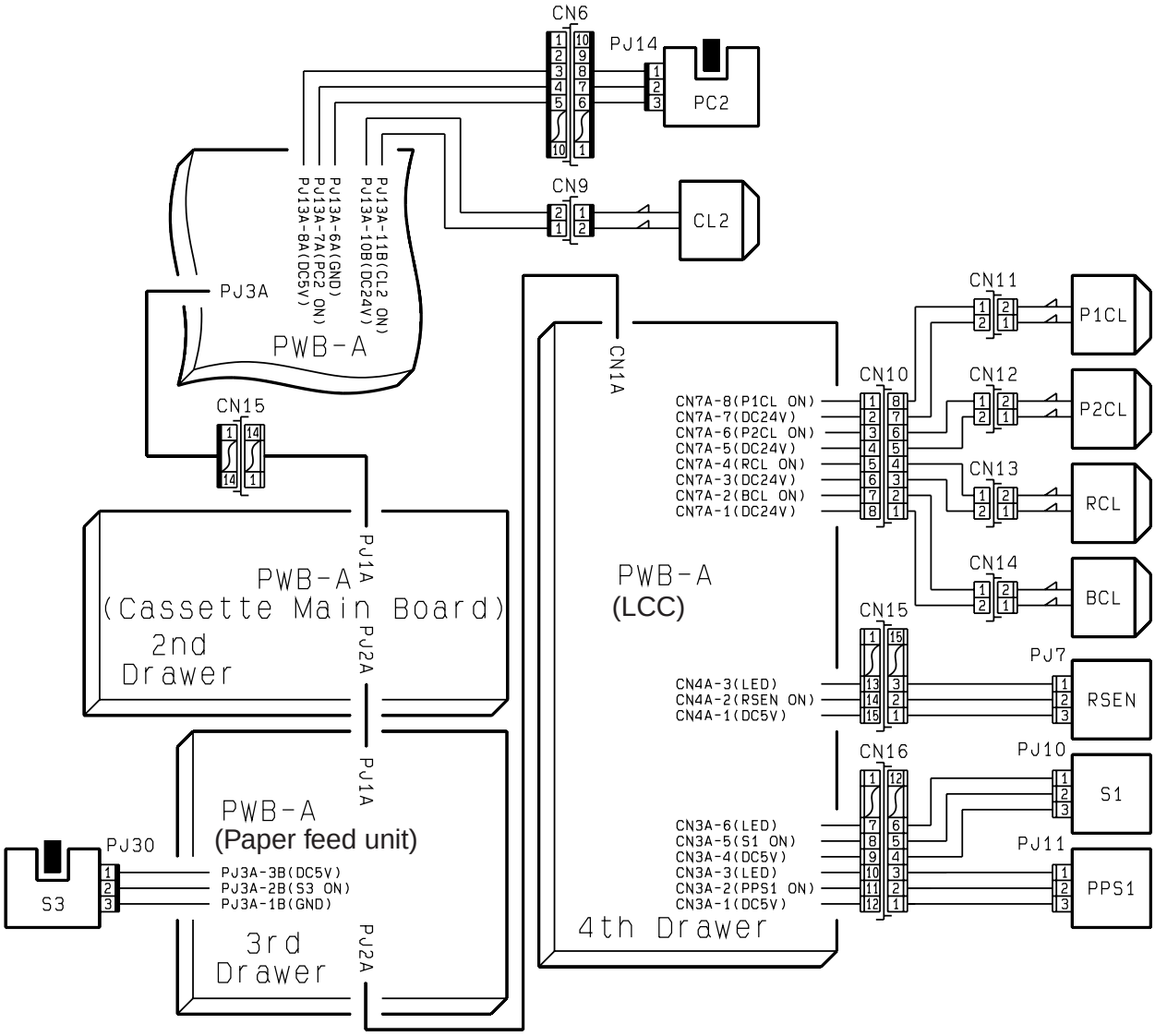


<Paper Take-Up/Transport Misfeed (Paper feed unit) Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Paper is not taken up at all.	1	Does the paper being used meet the product specifications?	NO	Instruct the user to use the paper that meets product specifications.
	2	Is the paper curled, wavy, or damp?	YES	Change the paper. Instruct the user on the storage of paper.
	3	Are the Edge Guide and Trailing Edge Stop (of the drawer) positioned to the exact size of the paper used?	NO	Slide the guides to the exact size of the paper.
	4	Is the Paper Take-Up Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Take-Up Roll.
	5	Is the Paper Lifting Plate dirty or deformed?	YES	Clean or change the Paper Lifting Plate.
	6	Is the Paper Separator Finger dirty or deformed?	YES	Clean or change the Paper Separator Finger.
	7	Check CL2 for operation. Does the voltage across CN9-1 on the PWB-A side and GND change from DC24V to DC0V when the Start key is pressed?	NO	Change PWB-A.
	8	Check SL1 for operation. Does the voltage across PJ3A-1A on PWB-A (Paper feed unit) and GND change from LOW to HIGH when the Start key is pressed?	YES	Check various parts for possible overload and, if they are okay, change SL1 or CL2.
			NO	Change PWB-A (Paper feed unit), PWB-A (Cassette Main Board), or PWB-A, in that order.
• Paper is at a stop at the vertical transport section. • Paper is at a stop near the Synchronizing Rollers.	1	Is the Vertical Transport Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Vertical Transport Roller.
	2	Is the Vertical Transport Guide Plate dirty or deformed?	YES	Clean or change the Vertical Transport Guide Plate.
	3	Is a size error displayed when the misfeed display is reset?	YES	Check that the size of the paper loaded in the current drawer matches the size set for that drawer.
	4	✻ A misfeed is detected at the transport section of the 3rd Drawer. Is PC2 fully operational? Check the input data using I/O Check.	NO	Check the PC2 actuator for operation and, if it is intact, change PC2.
	5	Are all S3's fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change PWB-A.
	6	Does the voltage across PJ3A-2B on PWB-A (Paper feed unit) and GND change to DC0V when S3 is blocked and to DC5V when S3 is unblocked?	YES	Change PWB-A (Paper feed unit) or PWB-A (Cassette Main Board).
			NO	Check the S3 actuator for operation and, if it is intact, change S3.

(5) Paper Take-Up/Transport Misfeed (LCC)

Relevant Electrical Parts	
Take-Up Clutch 1 P1CL	Synchronizing Roller Sensor PC2
Take-Up Clutch 2 P2CL	Transport Clutch CL2
Paper Empty Sensor 1 PPS1	Take-Up Sensor S3
Paper Standby Position Sensor S1	LCC Main Board PWB-A: LCC
Separator Clutch BCL	Cassette Main Board PWB-A: Paper feed unit
Registration Clutch RCL	Cassette Main Board PWB-A
Registration Sensor RSEN	Master Board PWB-A



<Paper Take-Up/Transport Misfeed (LCC) Troubleshooting Procedure>

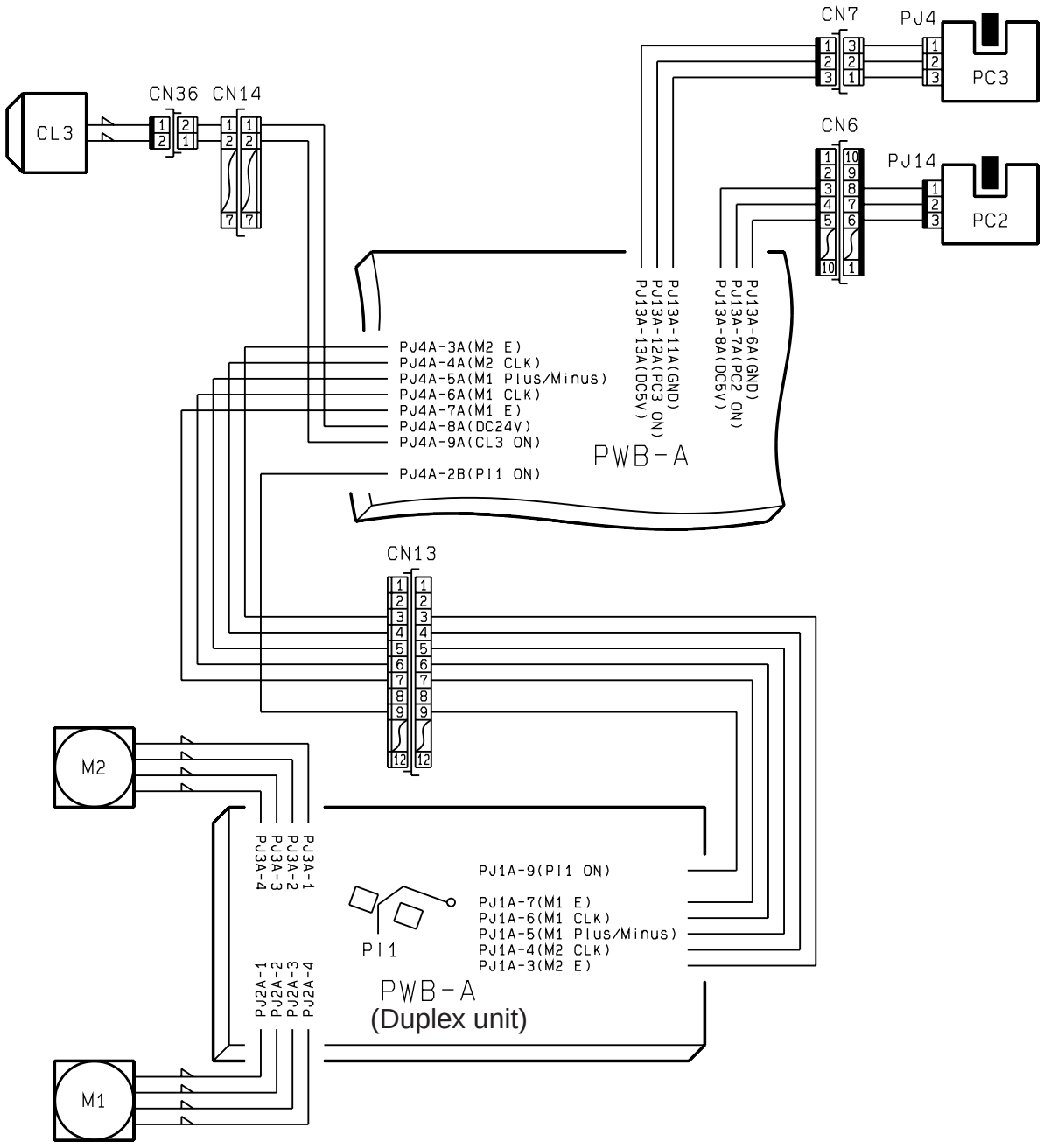
Symptom	Step	Check Item	Result	Action
• Paper is not taken up at all.	1	Does the paper being used meet the product specifications?	NO	Instruct the user to use the paper that meets product specifications.
• Paper is at a stop before the Paper Feed/Separat or Rolls.	2	Is the paper curled, wavy, or damp?	YES	Change the paper. Instruct the user on the storage of paper.
	3	Is the Paper Take-Up Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Take-Up Roll.

Symptom	Step	Check Item	Result	Action
• Paper is not taken up at all. • Paper is at a stop before the Paper Feed/Separator Rolls.	4	Is PPS1 fully operational? Check the input data using I/O Check.	YES	Perform steps 6 and onward.
	5	Does the voltage across CN3A-2 on PWB-A (LCC) and GND change from LOWto HIGHwhen PPS1 is blocked?	YES	Change PWB-A (LCC), PWB-A (Paper feed unit), or PWB-A (Cassette Main Board), in that order.
			NO	Change PPS1.
	6	Is paper fed up to S1 when paper is loaded in Lift 2 only and the drawer is slid into the copier?	YES	Perform steps 8 and onward.
	7	Check P2CL for operation. Does the voltage across CN7A-6 on PWB-A (LCC) and GND change from DC24V to DC0V when step 6 is performed again?	YES	Check various parts for possible overload and, if they are okay, change P2CL.
			NO	Change PWB-A (LCC), PWB-A (Paper feed unit), PWB-A (Cassette Main Board), or PWB-A, in that order.
	8	Check P1CL for operation. Does the voltage across CN7A-8 on PWB-A (LCC) and GND change from DC24V to DC0V when step 6 is performed again?	NO	Change PWB-A (LCC), PWB-A (aper feed unit), PWB-A (Cassette Main Board), or PWB-A, in that order.
	9	Is S1 fully operational? Check the input data using I/O Check. Does the “S1S” input signal change from 0 to 1 when the drawer loaded with paper is slid into the copier?	YES	Perform steps 11 and onward.
	10	Does the voltage across CN3A-5 on PWB-A (LCC) and GND change from LOWto HIGHwhen step 9 is performed again?	YES	Change PWB-A (LCC), PWB-A (Paper feed unit), or PWB-A (Cassette Main Board), in that order.
			NO	Change S1.
	11	Is the Paper Feed Roll or Separator Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Feed Roll or Separator Roll.
	12	Check BCL for operation. Does the voltage across CN7A-2 on PWB-A (LCC) and GND change from DC24V to DC0V when the Start key is pressed?	YES	Check various parts for possible overload and, if they are okay, change P1CL or BCL.
			NO	Change PWB-A (LCC), PWB-A (Paper feed unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the vertical transport section. • Paper is at a stop near the Synchronizing Rollers.	1	Is the Vertical Transport Roller or Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Vertical Transport Roller or Roll.
	2	Is RSEN fully operational? Check the input data using I/O Check.	YES	Check step 4 and onward.
	3	Does the voltage across CN4A-2 on PWB-A (LCC) and GND change from LOW to HIGH when RSEN is blocked?	YES	Change PWB-A (LCC), PWB-A (Paper feed unit), or PWB-A (Cassette Main Board), in that order.
			NO	Change RSEN.
	4	Check RCL for operation. Does the voltage across CN7A-4 on PWB-A (LCC) and GND change from DC24V to DC0V when the Start key is pressed?	NO	Change PWB-A (LCC), PWB-A (Paper feed unit), PWB-A (Cassette Main Board), or PWB-A, in that order.
	5	Check CL2 for operation. Does the voltage across CN9-1 on PWB-A and GND change from DC24V to DC0V when the Start key is pressed?	NO	Change PWB-A.
	6	✻If the 3rd Drawer is LCC Is PC2 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change RCL, CL2, or PWB-A, in that order.
			NO	Check the PC2 actuator for operation and, if it is intact, change PC2.
	7	✻If the 4th Drawer is LCC Is S3 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change RCL, CL2, or PWB-A, in that order.
	8	Does the voltage across PJ3A-2B on PWB-A (Paper feed unit) and GND change to DC0V when S3 is blocked and to DC5V when S3 is unblocked?	YES	Change PWB-A (Paper feed unit) or PWB-A (Cassette Main Board).
			NO	Check the S3 actuator for operation and, if it is intact, change S3.

(6) Duplex Turnover/Take-Up Misfeed (Duplex unit)

Relevant Electrical Parts	
Paper Exit Sensor PC3	Duplex Unit Transport Motor M2
Duplex Unit Transport Sensor PI1	Manual Feed Paper Take-Up Clutch CL3
Synchronizing Roller Sensor PC2	Master Board PWB-A
Switchback Motor M1	Duplex Main Board PWB-A: Duplex unit



<Duplex Turnover/Take-Up Misfeed (Duplex Unit) Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Paper is at a stop near the exit section.	1	Is the Paper Exit Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Exit Roller.
	2	Is PC3 fully operational? Check the input data using I/O Check.	NO	Check the PC3 actuator for operation and, if it is intact, change PC3.
	3	Check M1 for operation. Does the voltage across PJ1A-7 on PWB-A (Duplex Unit) and GND change from DC5V to DC0V during a 2-sided copy cycle?	YES	Check gears for proper engagement.
			NO	Change PWB-A.
	4	Does the voltage across PJ1A-5 on PWB-A (Duplex Unit) and GND change from DC5V to DC0V during a 2-sided copy cycle?	YES	Check various parts for possible overload and, if they are okay, change M1 or PWB-A (Duplex Unit).
			NO	Change PWB-A.
Paper is at a stop inside the Duplex Unit.	1	Is the Duplex Unit Transport Roller or Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Duplex Unit Transport Roller or Roll.
	2	Is a torn piece of paper present on the paper path surface?	YES	Remove the torn piece of paper.
	3	Is the Manual Feed Take-Up Roller or Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Manual Feed Take-Up Roller or Roll.
	4	Check M2 for operation. Does the voltage across PJ1A-3 on PWB-A (Duplex Unit) and GND change from DC5V to DC0V during a 2-sided copy cycle?	YES	Check gears for proper engagement.
			NO	Change PWB-A.
	5	Is PI1 fully operational? Check the input data using I/O Check.	NO	Check the PI1 actuator for operation and, if it is intact, change PWB-A (Duplex Unit).
	6	Check CL3 for operation. Does the voltage across CN14-2 and GND change from DC24V to DC0V when paper is taken up from the Duplex Unit?	YES	Check various parts for possible overload and, if they are okay, change CL3 or M2.
			NO	Change PWB-A.
Paper is at a stop near the Synchronizing Rollers.	1	Is PC2 fully operational? Check the input data using I/O Check.	YES	Check various parts for possible overload and, if they are okay, change PWB-A.
			NO	Check the PC2 actuator for operation and, if it is intact, change PC2.

4.11 Error Codes

If an error occurs during a communication, a check message will be printed. The following provides an explanation of the information found on check messages.

- A possible solution to the problem
- The date and time of the attempted communication
- The sending location (if the remote fax has a Location ID)
- The number of pages which got through before the error terminated the call
- The error code
- The sample document.

You will also see a code listed in the Result column of the report. Result codes indicate the specific problem encountered:

- "D" codes occur while dialing
- "R" codes occur during reception
- "T" codes occur during transmission

Here is a list of error codes the fax machine may print.

Dialing errors

D.0.2 The remote unit is busy. Try the call again.

D.0.3, **D.0.8** The remote unit didn't respond, the call couldn't be completed or **STOP** was pressed during dialing. Re-try the call. If your machine repeats the message, call the remote fax unit's operator and verify that unit is operating properly.

D.0.6, D.0.7 Either the remote unit didn't respond, the call somehow didn't go through or **STOP** was pressed during dialing. Try the call again.

Reception errors

R.1.1 T1 time-out. The calling unit was not a fax machine or the transmitting unit is having difficulties.

R.1.2 Compatibility error. The calling unit is attempting to poll a document that does not exist.

R.1.4 The **STOP** button was pressed during reception.

R.1.5 The fax machine didn't detect the silence period for ending channel when receiving RCR.

R.2.3 No response to FTT. Poor phone line conditions made fax communication impossible. Enable the one second pause after CED on Memory Switch C:0. Also try increasing the echo wait time on Memory Switch C:1 if echo is on the line.

R.3.1 No response to CFR. DCN was received from the transmitter. Poor line conditions made communication impossible. Adjust the echo wait time on Memory Switch C:1. Try increasing the output levels via Machine Parameter A:1.

R.3.3 Too many errors were detected during data reception. The carrier was interrupted. Increase the data error rate on Memory Switch C:0.

R.3.4 DCN was received after FTT. Communication was not possible at 2400 bps. Poor phone line conditions prevented fax communication. Enable the Eye Quality Check on Memory Switch D:1 and D:2.

R.4.2 MPS/EOM/EOP was not received. Either the line disconnected before reception was completed or too many errors were detected by the receiving unit. Adjust the data error rate on Memory Switch C:0. It may also be necessary to decrease the receive communication speed via Memory Switch C:0.

R.4.4 The receiving fax machine has reached its memory capacity.

R.5.1 DCN was received instead of RR during ECM communication.

R.5.2 Line noise or other problems prevented ECM reception.

R.8.1 A compatibility error occurred.

R.8.10 Line noise or other problems prevented line probing.

R.8.11 The fax machine timed out while waiting for the retrain signal.

Transmission errors

T.1.1 T1 time-out. The remote fax machine didn't respond to your machine. This usually occurs during a manual transmission or when an incorrect number was dialed. Call someone at the remote machine.

T.1.2 The fax machine's page counter detected a possible document feeder error. Carefully put the document back into the feeder and try the call again.

T.2.1 CFR or FTT was not received from the remote machine. Either the phone line disconnected during fax communication or transmission became impossible due to bad phone line conditions. Try the call again. It may be necessary to increase the output levels on Machine Parameter A:1. The receive machine may also have closed network or block junk fax enabled.

T.2.2 The two fax machines were incompatible. No mailbox at receiver or security transmission is enabled.

T.2.3 FTT was received from the remote machine at 2400 bps. Bad phone line conditions made fax communication impossible. Conditions can change rapidly, so try the call later. Turn on the echo protect tone on Memory Switch B:0. Also adjust the interval between DCS and TCF on Memory Switch B:1. If the problem persists, try increasing the output levels on Machine Parameter A:1.

T.3.1 The page counter in the fax machine detected a document feeder error during transmission. Carefully re-insert the document into the feeder and re-try the call.

T.3.2 The fax machine didn't detect the silence period for ending channel.

T.4.1 No response to MPS/EOP/EOM. Poor phone lines caused the receiving unit to disconnect. Adjust the interval between CFR and data on Memory Switch B:1. Try increasing the output levels on Machine Parameter A:1. It may also be necessary to adjust the transmit speed on Memory Switch B:0.

T.4.2 RTN was received from the remote machine. After transmission began, poor line conditions developed. Try the call again. Attempt the solutions described for the T.4.1 error.

T.4.4 Poor line conditions prevented transmission. PIP was received. The transmission was interrupted by the call mode. The receiving unit may be experiencing problems. Try the call again.

T.5.1 No response to RR from the remote machine. Line noise or other problems prevented ECM transmission. Increase the ECM response time on Memory Switch B:2.

T.5.2 No response to CTC. Line noise or other problems prevented ECM transmission. Increase the ECM response time on Memory Switch B:2.

T.5.3 EOR was received from the remote unit but further transmission was not possible. Adjust Memory Switch B:5 for this problem.

T.8.1 A compatibility error occurred.

T.8.10 Line noise or other problems prevented line probing.

T.8.11 The remote fax machine didn't complete the equalizer training phase.

Communication Error Messages

The error messages on Check Message printouts indicate the following:

Here's a brief summary:

Error Message	Possible Meanings
Check condition of remote fax.	• Remote machine malfunctioned • No handshake signals from remote machine • Wrong phone number reached
Repeat transmission.	• Poor phone line conditions prevented communication • No handshake signals from remote machine • Document missfeed or miscount • Unable to reach remote machine after attempting specified number of redial
Line is busy.	• Remote machine was busy • Remote machine didn't answer
Check received documents.	• Receive confirmation signal not received from remote machine • Poor line conditions caused a poor image
Memory full.	• Remote unit's memory capacity has been exceeded
Dialing number is not set.	• An autodialer number is not stored programmed properly
Stopped.	• The **STOP** key was pressed at the remote fax during the handshake
(Message area is blank)	• Someone pressed **STOP** during communication • Printer error occurred during communication

4.12 Service Call Error

When certain machine problems occur these message will appear in the LCD.

4.12.1 Call For Service

Symptom: “Call For Service” is in the LCD.

Suggested corrective action:

1. Verify the lamp turns on when the book cover open and close.
2. If the lamp turns on, check the back ground seal surface dirt. If dirty, clean the back ground seal. The back ground seal is attached on the inner guide B.
3. Verify the mirror carriage moves normally. (See “Mirror carriage error”, page 4-2)
4. If during step 1 the lamp did not turn on, check the following connection:
    - Lamp assembly to the Inverter PCB (CN2)
    - Inverter PCB (CN1) to the Harness to the main control PCB (P13)
5. Replace the lamp and/or the Inverter PCB.

4.12.2 Please Call Service

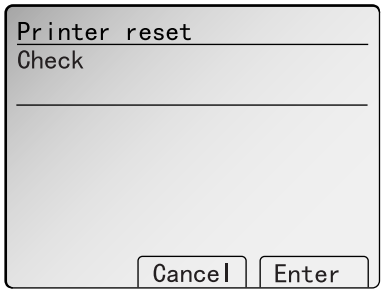
This machine CPU has a function that self-diagnoses the printer conditions. On detection of a malfunction, the corresponding error code representing a particular malfunction name, location, and details as listed on next page is displayed on the LCD together with a “Please Call Service” message. (Such as “Please Call Service: 01”)

- Perform the following steps to reset the printer trouble code.

Malfunction Resetting Procedure

This mode clears the service call. Perform this operation after solved the trouble.

1. Press **MENU**, ✻, **M.**



2. Press **[Enter]**. The service call will be cleared and the machine will return to standby.

Note: To finish the operation without performing clearing, press **[Cancel]**.

4.12.2.1 Detection Timing by Printer Error Code

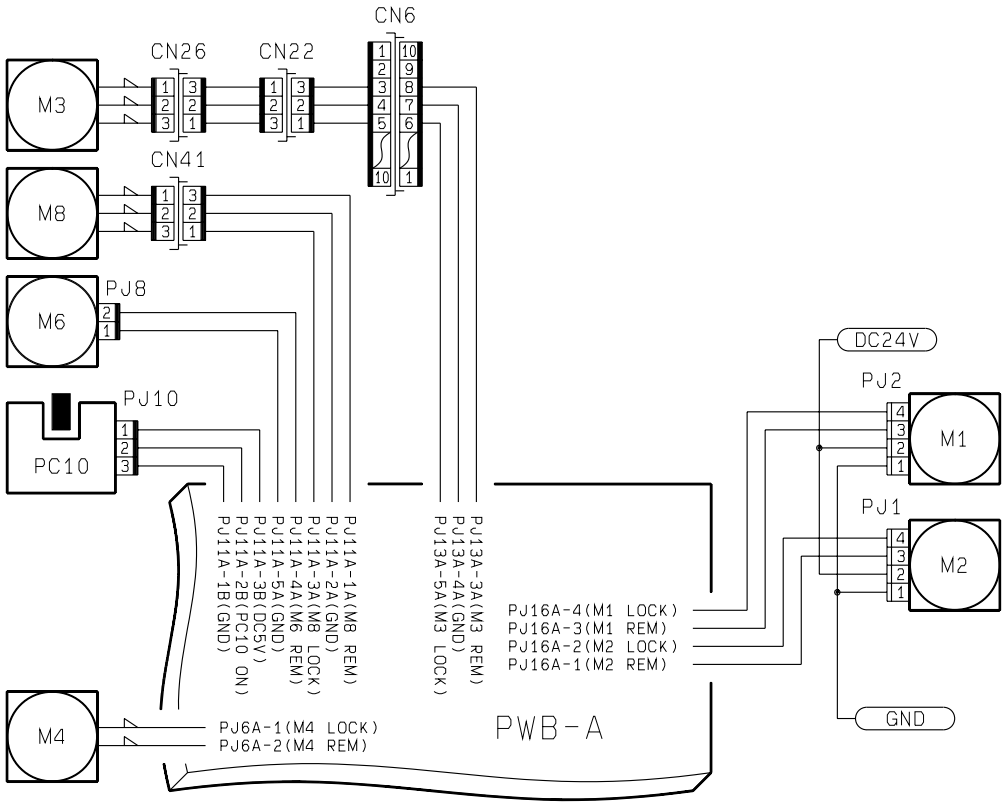
Code	Description	Detection Timing
01	Engine connection error	• The system fails in checking initial engine connection when Power Switch S1 is turned ON. • The system succeeded in checking initial connection when S1 was turned ON; then it fails in rechecking initial connection through the execution of a software reset when a communications error occurs during operation.
02	Communications error (option I/F)	———
03	Communications error (G/A)	———
08	Main Motor M2 malfunction	The Lock signal remains HIGH for a continuous 1-sec. period or more while M2 remains energized.
09	I/C Motor M1 malfunction	The Lock signal remains HIGH for a continuous 1-sec. period or more while M1 remains energized.
0A	Polygon Motor M10 malfunction	<Resolution selection failure detection> • The Lock signal is not detected for a given period of time after the resolution has been selected. (The Lock signal is not, however, detected for 1 sec. after the start.) <Faulty Lock signal detection> • No Lock signals are detected for the 1 sec. period which starts 1 sec. after the first Lock. ✻First Lock: The first Lock signal following 1 sec. after the selection of start or half speed. <Out-of-timing Lock detection> • The Lock signal is not detected for a continuous 0.5 sec. period while M10 is in the stabilized turning state (after a Lock has been detected). <Abnormal Lock detection> • The Lock signal remains ON for a continuous 5sec. period while M10 remains deenergized.
0B	Fusing Cooling Fan Motor M3 malfunction	The Lock signal remains HIGH or LOW for a continuous 1-sec. period or more while M3 remains energized.
0C	Power Unit Cooling Fan Motor M4	The Lock signal (analog input voltage) remains 0.4V or less for a continuous 0.5-sec. period or more while M4 remains energized.
10	HSYNC detection failure	• The SOS rising edge is not detected even after the lapse of 0.2 sec. after Polygon Motor M10 has started and laser output started. • No SOS rising edges are detected while VIA remains ON.
18	Warming-up failure	The temperature of the Fusing Rollers do not reach the required level even after the lapse of a given period of time during a warming-up cycle. • From room temperature to 100°C: Within 65 sec. • From 100°C to 140°C: Within 25 sec. • From 140°C to 170°C: Within 20 sec. • From 170°C to the completion of warming-up: Within 22 sec.
19	Abnormally low fusing temperature	• The fusing temperature remains 130°C or less for a continuous 0.1-sec. period or more during the standby state or printing. • The fusing temperature remains 80°C or less for a continuous 2-min. period or more during the low-temperature standby state.

Code	Description	Detection Timing
1A	Abnormally high fusing temperature	The fusing temperature remains 230°C or more for a continuous 0.1-sec. period or more.
1B	Faulty EEPROM	No initial data is written in EEPROM.
1E	I/C initialization failure	After failing to blow the imaging cartridge fuse 2 consecutive times, 3.6V or more is detected and the I/C is determined to be new.
20	LCC Transport Motor HMOT malfunction (LCC)	The HMOT Lock signal is not input for a given period of time.
21	LCC Lift-Up Motor EMOT malfunction (LCC)	The overcurrent detection circuit detects an overcurrent condition that lasts for a given period of time while EMOT remains energized.
23	Lift 1 ascent motion failure (LCC)	Lift-Up Sensor 1 LS1 is not blocked (H) within a given period of time after EMOT has been energized (Lift 1 has started moving up).
24	Lift 2 ascent motion failure (LCC)	Lift-Up Sensor 2 LS2 is not blocked (H) within a given period of time after EMOT has been energized (Lift 2 has started moving up).
25	Communications error (LCC)	LCC becomes uncontrollable due to an error in communications between the LCC and copier.
12	Faulty ATDC Sensor E1	The value of data read by E1 is faulty. [E1 reading is 7% or less (3.92V or more) or 19% or more (1.41V or less).]
11	ATDC adjustment failure	• In an F8 (ATDC control voltage automatic adjustment) operation, the adjustment of ATDC control voltage is not completed within 1 min. after E1 sampling. • In an F8 operation, the control voltage falls outside the range of 5.39V to 8.15V.
0D	Ozone Fan Motor M8 malfunction	The Lock signal remains HIGH or LOW for a continuous 1-sec. period or more while M8 remains energized.
0E	Main Hopper Toner Replenishing Motor M6 malfunction	• Toner Bottle Home Position Sensor PC10 remains blocked (L) for a continuous 2-sec. period or more while M6 remains energized. • PC10 remains unblocked (H) for a continuous 6-sec. period or more while M6 remains energized.
28	Shift Tray shift motion failure	(When moving from home to shift position) The Shift Home Sensor is blocked after a given period of time after the Shift Motor has been energized (at which timing the motor is deenergized). (When moving from shift to home position) The Shift Home Sensor is not blocked even after the lapse of a given period of time after the Shift Motor has been energized.

4.12.2.2 Troubleshooting Procedures by Printer Error Code

(1) 08: M2 Malfunction
09: M1 Malfunction
0B: M3 Malfunction
0D: M8 Malfunction
0C: M4 Malfunction
0E: M6 Malfunction

Relevant Electrical Parts	
I/C Motor M1	Main Hopper Toner Replenishing Motor M6
Main Motor M2	Ozone Fan Motor M8
Fusing Cooling Fan Motor M3	Toner Bottle Home Position Sensor PC10
Power Unit Cooling Fan Motor M4	Master Board PWB-A



08

Step	Check Item	Result	Action
1	Does M2 turn after the malfunction has been reset?	NO	Check various parts for possible overload.
2	Check M2 for operation. Does the voltage across PJ1-3 of M2 and GND change from DC5V to DC0V after the malfunction has been reset?	NO	Change PWB-A.
3	Does the voltage across PJ1-4 of M2 and GND change from DC5V to DC0V after the malfunction has been reset?	YES	Change PWB-A.
		NO	Change M2.

09

Step	Check Item	Result	Action
1	Does M1 turn after the malfunction has been reset?	NO	Check various parts for possible overload.
2	Check M1 for operation. Does the voltage across PJ2-3 of M1 and GND change from DC5V to DC0V after the malfunction has been reset?	NO	Change PWB-A.
3	Does the voltage across PJ2-4 of M1 and GND change from DC5V to DC0V after the malfunction has been reset?	YES	Change PWB-A.
		NO	Change M14.

0B

Step	Check Item	Result	Action
1	Does M3 turn after the malfunction has been reset?	NO	Check the connector and harness between M3 and PWB-A.
2	Check M3 for operation. Does the voltage across CN6-8 on the PWB-A side and GND change from DC0V to DC24V after the mal-function has been reset?	NO	Change PWB-A.
3	Does the “0B” display persist even after M3 has been replaced with a new one?	YES	Change PWB-A.

0D

Step	Check Item	Result	Action
1	Does M8 turn after the malfunction has been reset?	NO	Check various parts for possible overload.
2	Check M8 for operation. Does the voltage across CN41-3 on the PWB-A side and GND change from DC0V to DC24V after the mal-function has been reset?	NO	Change PWB-A.
3	Does the “0D” display persist even after M8 has been replaced with a new one?	YES	Change PWB-A.

0C

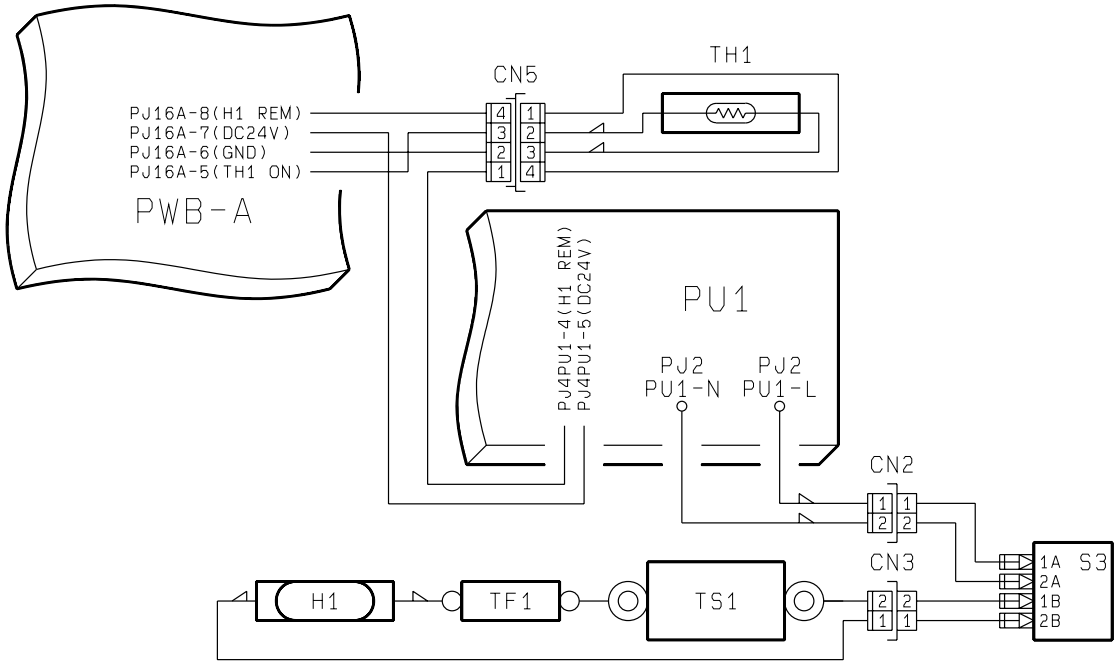
Step	Check Item	Result	Action
1	Does M4 turn after the malfunction has been reset?	YES	Change PWB-A.
2	Does the “0C” display persist even after M4 has been replaced with a new one?	YES	Change PWB-A.

0E

Step	Check Item	Result	Action
1	After the malfunction has been reset, remove the Rear Lower Cover and block Toner Bottle Cover Sensor PC11. Then, unlocking the Toner Bottle Lock Lever, turn the Toner Bottle a half turn by hand. Does the Toner Bottle turn when PC11 is unblocked (H) with the Toner Bottle Lock Lever kept unlocked?	YES	Perform step 3.
		NO	Check various parts for possible overload.
2	Does the voltage across PJ8-2 of M6 and GND change from DC0V to DC24V when step 1 is performed again?	YES	Change M6.
		NO	Change PWB-A.
3	Is PC10 fully operational? Check the input data using I/O Check. Does the input signal value for “Toner Bottle Set” change between “0” and “1” when the Toner Bottle is turned by hand?	YES	Change PWB-A.
		NO	Change PC10.

(2) 18: Warming-up Failure
19: Abnormally Low Fusing Temperature
1A: Abnormally High Fusing Temperature

Relevant Electrical Parts	
Fusing Roller Heater Lamp H1	Fusing Roller Heater Lamp Fuse TF1
Fusing Roller Thermistor TH1	Side Cover Interlock Switch 2 S3
Fusing Roller Thermostat TS1	Power Supply Unit 1 PU1
	Master Board PWB-A



18, 19

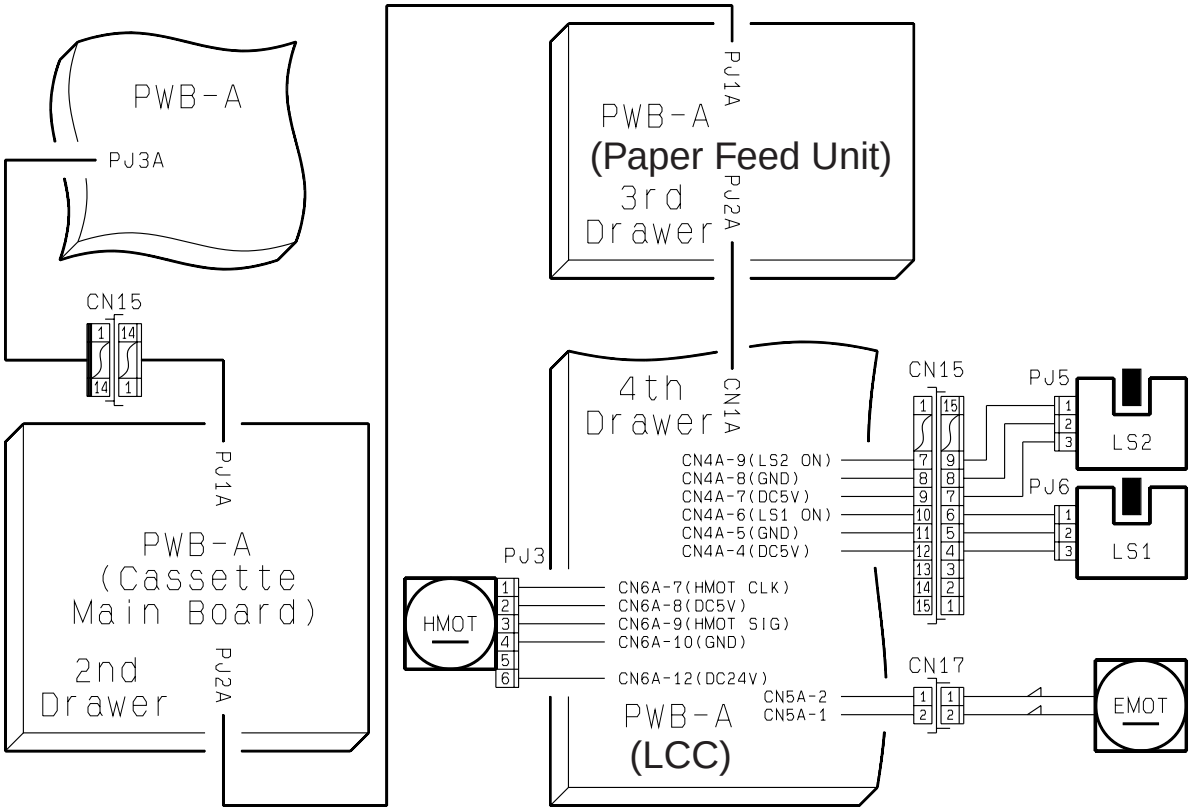
Step	Check Item	Result	Action
1	Does H1 turn ON after the malfunction is reset?	YES	Check TH1 for contamination or installation.
2	Is there continuity across CN3-1 and 2 on the Fusing Unit end with CN3 (2P) disconnected?	NO	Check H1, TS1, and TF1 for continuity.
3	Is there continuity across 1A and 1B, and across 2A and 2B, of S3 when S3 is turned ON?	NO	Change S3.
4	Is the resistance of TH1 (across CN5-2 and 3 on the Fusing Unit end) infinity?	YES	Change TH1.
5	Is Fuse F2 on PU1 conducting?	YES	Change PU1 or PWB-A.
		NO	Change the fuse.

1A

Step	Check Item	Result	Action
1	Is TH1 installed properly?	NO	Install TH1 correctly.
2	Is TH1 dirty?	YES	Clean or change TH1.
3	Is the circuit across CN5-2 and 3 on the Fusing Unit end closed when CN5 (4P) is disconnected?	YES	Change TH1.
		NO	Change PWB-A or PU1.

(3) 20: HMOT Malfunction
21: EMOT Malfunction
23: Lift 1 Ascent Motion Failure
24: Lift 2 Ascent Motion Failure
25: Communications Error

Relevant Electrical Parts	
LCC Lift-Up Motor EMOT	Large capacity cassette (LCC) Main Board PWB-A
Lift-Up Sensor 1 LS1	Paper Feed Unit Main Board PWB-A
Lift-Up Sensor 2 LS2	Cassette Main Board PWB-A
LCC Transport Motor HMOT	Master Board PWB-A



20

Step	Check Item	Result	Action
1	Does “20” reappear even after HMOT has been replaced with a new one?	YES	Change PWB-A (LCC), PWB-A (Paper Feed Unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

21

Step	Check Item	Result	Action
1	Does “21” reappear even after EMOT has been replaced with a new one?	YES	Change PWB-A (LCC), PWB-A (Paper Feed Unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

23

Step	Check Item	Result	Action
1	Is LS1 fully operational? Check the input data using I/O Check	YES	Perform step 3 and onward.
2	Does the voltage across CN4A-6 on PWB-A (LCC) and GND change to DC5V when LS1 is blocked and to DC0V when LS1 is unblocked?	YES	Change PWB-A (LCC), PWB-A (Paper Feed Unit), or PWB-A (Cassette Main Board), in that order.
		NO	Change LS1.
3	Does EMOT turn when a drawer loaded with paper is slid into the copier?	YES	Check gears and couplings for proper engagement and, if they are okay, change PWB-A.
4	Does the voltage across CN5A-1 on PWB-A (LCC) and GND change from DC0V to DC24V when step 3 is performed again?	YES	Check various parts for possible overload and, if they are okay, change EMOT.
		NO	Change PWB-A (LCC), PWB-A (Paper Feed Unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

24

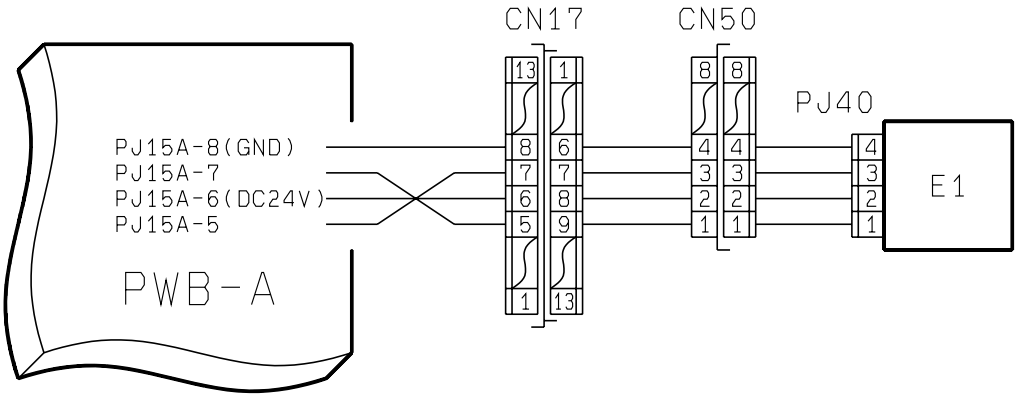
Step	Check Item	Result	Action
1	Is LS2 fully operational? Check the input data using I/O Check.	YES	Perform step 3 and onward.
2	Does the voltage across CN4A-9 on PWB-A (LCC) and GND change to DC5V when LS2 is blocked and to DC0V when LS2 is unblocked?	YES	Change PWB-A (LCC), PWB-A (Paper Feed Unit), or PWB-A (Cassette Main Board), in that order.
		NO	Change LS2.
3	Does EMOT turn when a drawer loaded with paper is slid into the copier?	YES	Check gears and couplings for proper engagement and, if they are okay, change PWB-A.
4	Does the voltage across CN5A-1 on PWB-A (LCC) and GND change from DC0V to DC24V when step 3 is performed again?	YES	Check various parts for possible overload and, if they are okay, change EMOT.
		NO	Change PWB-A (LCC), PWB-A (Paper Feed Unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

25

Step	Check Item	Result	Action
1	Does “25” reappear even after PWB-A (LCC) has been replaced with a new one?	YES	Change PWB-A (Paper Feed Unit), PWB-A (Cassette Main Board), or PWB-A, in that order.

(4) 12: Faulty E1
11: ATDC Adjustment Failure

Relevant Electrical Parts	
ATDC Sensor E1	Master Board PWB-A



11, 12

Step	Check Item	Result	Action
1	Are PJ40, CN50, CN17, and PWB-A PJ15A connected properly?	NO	Connect them properly.
2	Is the CN50 connection dirty?	YES	Clean.
3	Is “11” or “12” displayed even when an I/C with the same T/C as that of a new one has been installed?	NO	Change the I/C with a new one.
4	Is “11” or “12” displayed even when an I/C with the same T/C as that of a new one has been installed and an F8 operation run? (Be sure to record the ATDC control voltage setting value if an F8 operation is to be run.)	YES	Change PWB-A, install the old I/C, and return the ATDC control voltage setting to the value recorded. If “C0F32” or “C0F33” redisplayed, change the I/C with a new one.
		NO	Change the I/C with a new one.

(5) 01, 02, 03, 10, 0A, 1B, 1E

- These malfunctions are concerned with faulty symptoms as they relate to software, hardware, and communications. For remedial actions, change the board, check for cable connections, and turn the Power Switch OFF and ON.

Code	Action
01	1. Check the connection between PWB-A and UN2, reset the malfunction, and turn OFF and ON the Power Switch. 2. If the same malfunction persists, change PWB-A or UN2.
02	1. Reset the malfunction and turn OFF and ON the Power Switch. 2. If the same malfunction persists, check the connection between the copier PWB-A and Finisher PWB-A. 3. If the connection is made properly, unplug the connector between the copier and Finisher and turn OFF and ON the Power Switch. → If the malfunction code display persists, change the copier PWB-A. → If the malfunction is no longer detected, check the connector and, if it is intact, change the Finisher PWB-A.
03	1. Reset the malfunction and turn OFF and ON the Power Switch. 2. If the same malfunction persists, check the connection between the copier PWB-A and A to E below: A. 2nd Drawer paper source unit B. 3rd Drawer paper source unit (Paper feed unit/LCC) C. 4th Drawer paper source unit (Paper feed unit/LCC) D. 5th Drawer paper source unit (Paper feed unit) E. 2-Bin Tray or shift Tray 3. If the connection is made properly, unplug the connector between the copier and A to E and turn OFF and ON the Power Switch. → If the malfunction code display persists, change the copier PWB-A. → If the malfunction is no longer detected, connect the connectors sequentially and turn OFF and ON the Power Switch. When “C133A” is detected, check the connector of the corresponding paper source unit and, if it is intact, change the PWB-A of the unit.
10	1. Reset the malfunction and turn OFF and ON the Power Switch. 2. If the same malfunction persists, check the harnesses and PJs between PH Unit and PWB-A and, if they are intact, change PH Unit or PWB-A, in that order.
0A	1. Reset the malfunction and turn OFF and ON the Power Switch. 2. If the same malfunction persists, check the harnesses and PJs between PH Unit and PWB-A and, if they are intact, change PH Unit or PWB-A, in that order.
1B	1. Reset the malfunction, turn OFF and ON the Power Switch, and unplug the power cord and plug it back in. 2. If the malfunction is detected again, check the connection between IC3 on PWB-A and the EEPROM and, if it is good, change PWB-A. 3. If the malfunction is still detected, change the EEPROM. ✻ For the precautions to be observed when replacing the EEPROM, see DIS/REASSEMBLY, ADJUSTMENT.
1E	1. Reset the malfunction, turn OFF and ON the Power Switch, and reinstall the I/C. 2. If the malfunction is detected again, check the terminal block for the I/C fuse and HV1 and, if it is intact, change HV1 or PWB-A.

(6) 28 Shift Tray shift motion failure

Step	Check Item	Result	Action
1	Does the Shift Tray move in the initial operation?	YES	Check step 4.
2	Does the Shift Tray slide smoothly when the gear is turned manually with the Shift Motor removed?	NO	Check for contamination and improper installation.
3	Is an output signal being sent from the Main Board to Shift Motor?	YES	Check the wiring between the Main Board and Shift Motor and, if it is intact, change the motor.
		NO	Change the Main Board.
4	Are the Shift Home Sensor and its light blocking plate dirty?	YES	Remove foreign matter or clean.
5	Is the Shift Home Sensor output signal properly applied to the Main Board?	YES	Change the Main Board.
		NO	Check the wiring between the Main Board and Shift Home Sensor and, if it is intact, change the sensor.

4.13 Image Failure

4.13.1 Image Failure Troubleshooting

Image failures have many possible causes. For troubleshooting, it is necessary to deter-mine whether a failure is attributable to:

1. A basic cause or any other cause
2. The input system (Scanner) or output system (Printer engine).

In this chapter, troubleshooting is divided into “initial checks” and “troubleshooting procedures classified by image failures.” If an image failure has occurred, first make the initial checks, then proceed to the corresponding image failure troubleshooting procedure.

4.13.2 Initial Checks

1. Place of installation

- Is the source voltage normal? Does the voltage vary greatly?
- Is the copier installed in a hot, humid place where temperature varies sharply?
- Is the copier installed in a dusty place?
- Is the copier subjected to direct sunlight?
- Is the copier level?

2. Copy paper

- Is the recommended paper used?
- Is the paper damp?
- Does the paper size set in the paper source match the size of the paper loaded in it?

3. Original

- Is the original written in light pencil?
  → Use the test chart to check the image.
- Is the original transparent, or are transparencies being used?
  → Place a blank sheet of paper over the original and make a copy.
- Is the Original Glass dirty or scratched?
  → Clean a dirty glass, or replace a scratched one.

4. Supplies

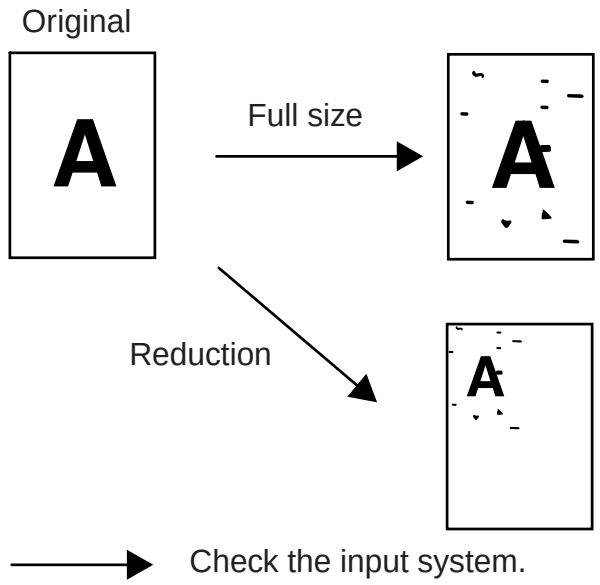
- Have the supplies, such as the PC Drum, Cleaning Blade, and other parts that affect image quality, reached the end of their cleaning or replacement cycle?
- Are two or more imaging cartridges being used alternately?

5. Adjustment items

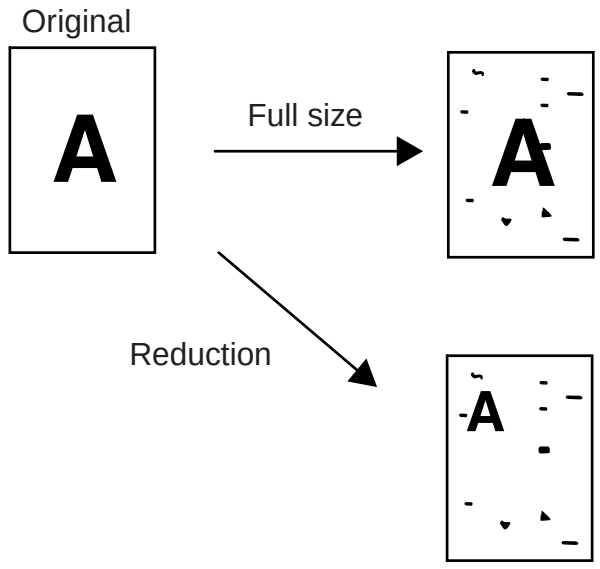
- Among the adjustment items given in Machine parameter (see Section 3), is there any adjustment that may remedy the image failure?

6. Input system (scanner) or output system (printer engine)?

- To print the test pattern, press **MENU, ✻, 9.**
- If the test pattern output has the same problem as the copy image:
  → Check the output system.
- If the test pattern output is normal:
  → Check the input system.
- Make a copy at a different zoom ratio.



→ Check the input system.

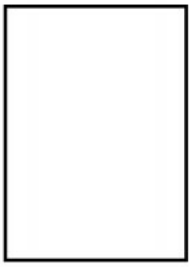


→ Check the output system.

4.13.3 Troubleshooting Procedures by Image Failure

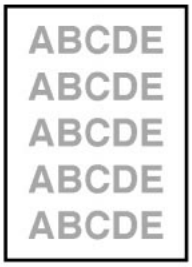
<Image Failure Samples>

1. Blank copy

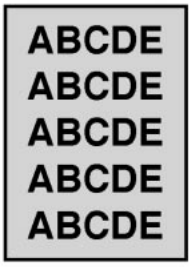


2. Black copy

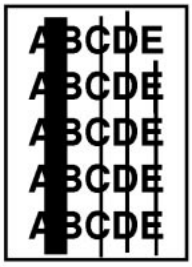
3. Low image density



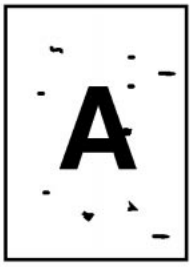
4. Foggy background



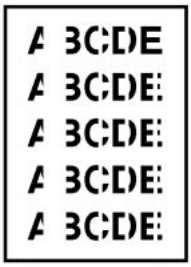
5. Black streaks or bands



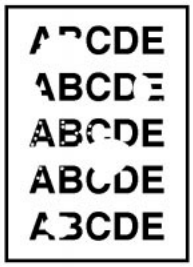
6. Black spots



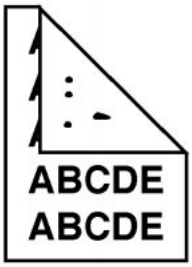
7. Blank streaks or bands



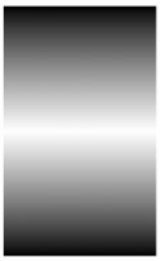
8. Void areas



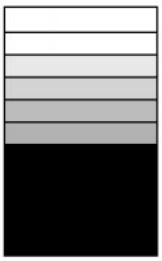
9. Smear on back



10. Uneven image density



11. Gradation reproduction failure



12. Rough image

13. Periodically uneven image

(1) Blank Copy

Section	Step	Check Item	Result	Action
Printer engine	1	Is toner empty?	YES	Check Sub Hopper Toner Empty Switch S4 and change the Toner Bottle.
	2	Is the drive transmission mechanism to the Developing Unit in good condition?	NO	Check and change as necessary.
	3	Is the image transfer current terminal intact?	NO	Check and change as necessary.
	4	Does the laser shutter (the one located on the laser beam path between the PH Unit and PC Drum) open and close properly?	NO	Adjust so that the shutter opens and closes properly.
	5	Does the I/C Shutter open and close properly?	YES	Change HV1, PH Unit, or PWB-A, in that order.
			NO	Adjust so that the shutter opens and closes properly.
Scanner	1	Is the Scanner drive transmission mechanism in good condition?	NO	Check and change as necessary.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(2) Black Copy

Section	Step	Check Item	Result	Action
Printer engine	1	Is the PC Drum charge voltage terminal in good condition?	NO	Check and change as necessary.
	2	Is the grid voltage terminal in good condition?	NO	Check and change as necessary.
	3	Is the developing bias terminal in good condition?	NO	Check and change as necessary.
	4	Does a black copy persist even after the I/C has been replaced with a new one?	YES	Change HV1 or PWB-A.
Scanner	1	Does the Exposure Lamp turn ON when make a copy with open the platen cover?	YES	Perform steps 4 and onward.
			NO	Check connectors and harnesses and perform steps 2 and 3.
	2	Does the voltage across P14 on pin 2 and pin 3 change from DC0V to DC24V when step 1 is performed again?	NO	Change PCB Scanner.
	3	Does the voltage across P14 on pin 1 and pin 3 change to DC0V when step 1 is performed again?	YES	Change Inverter or exposure lamp, in that order.
			NO	Change PCB Main.
	4	Are the mirrors and lens installed properly?	NO	Install them properly.
	5	Are the mirrors and lens dirty?	YES	Clean or change.

(3) Low Image Density

Section	Step	Check Item	Result	Action
Printer engine	1	Does the image get better when a copy is made with new paper loaded?	YES	Change the paper. Instruct the user on the storage of paper.
	2	Is toner empty?	YES	Check Sub Hopper Toner Empty Switch S4 and change the Toner Bottle.
	3	Is the image transfer current terminal intact?	NO	Check and change as necessary.
	4	Is the developing bias terminal intact?	NO	Check and change as necessary.
	5	Does the image density remain low even after the I/C has been replaced with a new one?	NO	This completes the procedure.
	6	Does the image density become higher when adjust the “Image Density” by Unique Switch F:3?	YES	This completes the procedure.
Scanner	1	Is the Scanner drive transmission mechanism in good condition?	NO	Check and change as necessary.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(4) Foggy Background

Section	Step	Check Item	Result	Action
——	1	Is sunlight or any other extraneous light entering the copier?	YES	Protect the copier from extraneous light.
Printer engine	1	Is the PC Drum dirty with foreign matter?	YES	Clean the PC Drum.
	2	Is the PC Drum charge voltage terminal in good condition?	NO	Check and change as necessary.
	3	Is the grid voltage terminal in good condition?	NO	Check and change as necessary.
	4	Is the developing bias terminal in good condition?	NO	Check and change as necessary.
	5	Is the Charge Neutralizing Sheet voltage terminal in good condition?	NO	Check and change as necessary.
	6	Is Eraser Lamp dirty?	YES	Clean.
	7	Does foggy background persist even after the I/C has been replaced with a new one?	NO	This completes the procedure.
	8	Does foggy background persist when adjust the “Image Density” by Unique Switch F:3?	NO	This completes the procedure.
Scanner	1	Are the mirrors and lens dirty?	YES	Clean or change.
	2	Is the Exposure Lamp dirty or deteriorated?	YES	Clean or change.
	3	Do the connections between the Exposure Lamp and INVERTER remain intact?	NO	Reconnect.
	4	Do the connections from INVERTER to PCB Scanner remain intact?	NO	Reconnect.

Section	Step	Check Item	Result	Action
Scanner	5	Do the connections from PCB Scanner to PCB Main remain intact?	NO	Reconnect.
	6	Do the connections from PCB Main to PCB Connect remain intact?	NO	Reconnect.
	7	Do the connections from PCB Connect to PWB-A Connect remain intact?	YES	Change INVERTER, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(5) Black Streaks or Bands

Section	Step	Check Item	Result	Action
Printer engine	1	Is the PC Drum dirty?	YES	Clean the PC Drum.
	2	Has toner spilled from the I/C inside of the copier?	YES	Clean the interior and change I/C.
	3	Is the PC Drum charge voltage terminal in good condition?	NO	Check and change as necessary.
	4	Is the grid voltage terminal in good condition?	NO	Check and change as necessary.
	5	Are the Fusing Rollers dirty with foreign matter?	YES	Clean or change the Fusing Rollers.
			NO	Change I/C.
Scanner	1	Are the mirrors, lens, Contact glass or FBS glass dirty with foreign matter?	YES	Clean.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(6) Black Spots

Section	Step	Check Item	Result	Action
Printer engine	1	Is the PC Drum dirty?	YES	Clean the PC Drum.
	2	Has toner spilled from the I/C inside of the machine?	YES	Clean the interior and change I/C.
	3	Is the PC Drum charge voltage terminal in good condition?	NO	Check and change as necessary.
	4	Is the grid voltage terminal in good condition?	NO	Check and change as necessary.
	5	Are the Fusing Rollers dirty with foreign matter?	YES	Clean or change the Fusing Rollers.
			NO	Change I/C.
Scanner	1	Are the mirrors, lens, Contact glass or FBS glass dirty with foreign matter?	YES	Clean.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(7) Blank Streaks or Bands

Section	Step	Check Item	Result	Action
Printer engine	1	Is the PC Drum dirty with foreign matter?	YES	Clean the PC Drum.
	2	Is the image transfer current terminal intact?	YES	Check and change as necessary.
	3	Is the Image Transfer Roller dented or scratched?	YES	Change the Image Transfer Roller.
	4	Are the Fusing Rollers scratched or dirty?	YES	Clean or change the Fusing Rollers.
	5	Is the PH Unit window glass dirty?	YES	Clean the window glass.
	6	Is the light path between PH and PC dirty with dust?	YES	Remove dust.
			NO	Change the I/C.
Scanner	1	Is the Shading Sheet under the Size cover dirty?	YES	Clean or change.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(8) Void Areas

Section	Step	Check Item	Result	Action
Printer engine	1	Does the image get better when a copy is made with new paper loaded?	YES	Change the paper. Instruct the user on the storage of paper.
	2	Is the Image Transfer Roller installed correctly?	NO	Install correctly.
	3	Is the Image Transfer Roller dented or scratched?	YES	Change the Image Transfer Roller.
	4	Is the image transfer current terminal intact?	NO	Check and change as necessary.
	5	Are the Fusing Rollers scratched or deformed?	YES	Change the Fusing Rollers.
			NO	Change the I/C.
Scanner	1	Is the Contact glass or FBS glass dirty?	YES	Clean or change.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(9) Smear on Back

Section	Step	Check Item	Result	Action
Printer engine	1	Is the Image Transfer Roller dirty?	YES	Clean or change.
	2	Has toner spilled from the I/C inside of the copier?	YES	Clean the interior and change I/C.
	3	Are the Fusing Rollers dirty?	YES	Clean or change the Fusing Rollers.

(10) Uneven Image Density

Section	Step	Check Item	Result	Action
Printer engine	1	Is the Image Transfer Roller dirty or deteriorated?	YES	Clean or change the Image Transfer Roller.
	2	Does the image get better when a copy is made with new paper loaded?	YES	Change the paper. Instruct the user on the storage of paper.
			NO	Change the I/C or PWB-A.
Scanner	1	Are the mirrors, lens, Contact glass or FBS glass dirty with foreign matter?	YES	Clean or change.
	2	Is the Shading Sheet under the Size cover dirty?	YES	Clean or change.
	3	Is the Exposure Lamp dirty or deteriorated?	YES	Clean or change.
	4	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(11) Gradation Reproduction Failure

Section	Step	Check Item	Result	Action
Printer engine	1	Does the image get better when a copy is made with new paper loaded?	YES	Change the paper. Instruct the user on the storage of paper.
			NO	Change PWB-A.
Scanner	1	Is the Shading Sheet under the Size cover dirty?	YES	Clean or change.
	2	Is the Contact glass or FBS glass dirty?	YES	Clean or change.
	3	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(12) Rough Image

Section	Step	Check Item	Result	Action
Printer engine	1	Is the Image Transfer Roller dirty?	YES	Clean or change.
	2	Is the image transfer current terminal intact?	YES	Change HV1, I/C, PH Unit, or PWB-A, in that order.
			NO	Check and change as necessary.
Scanner	1	Is the Scanner drive transmission mechanism in good condition?	NO	Check and change as necessary.
	2	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

(13) Periodically Uneven Image

Section	Step	Check Item	Result	Action
Printer engine	1	Is the Developing Unit drive gear cracked or dirty with foreign matter?	YES	Clean or change.
	2	Is the PC Drum drive gear cracked or dirty with foreign matter?	YES	Clean or change.
	3	Is the Synchronizing Roller drive gear cracked or dirty with foreign matter?	YES	Clean or change.
	4	Is the Fusing Unit drive gear cracked or dirty with foreign matter?	YES	Clean or change.
	5	Is the PH Assy secured properly?	YES	Change the I/C or PWB-A.
			NO	Secure properly.
Scanner	1	Is the FBS Motor drive gear cracked or dirty with foreign matter?	YES	Clean or change.
	2	Is the Scanner Motor secured properly?	NO	Secure properly.
	3	Are the FBS belts attached loose?	YES	Adjust the belt tension.
	4	Is the Mirror carriage A secured properly?	NO	Secure properly.
	5	Are the Mirror carriage drive belts wound properly?	NO	Wind the belts properly.
	6	Are the Scanner rails damaged or dirty with foreign matter?	YES	Clean or change.
	7	Do the connections from CCD → PCB AFE → PCB Scanner → PCB Main → PCB Connect → PWB-A remain intact?	YES	Change PCB AFE, PCB Scanner, PCB Main, PCB Connect or PWB-A, in that order.
			NO	Reconnect.

Section5
Maintenance & Adjustment

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5.1 Maintenance schedule

❑ Paper Take- Up/ Transport Section

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Paper Take- Up Roll	—	120,000	1	Page 5-4
Paper Dust Remover	60,000	120,000	1	Page 5-4
Side Cover	60,000	—	—	Page 5-5

❑ Scanner Section

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Separator Roller	1,000	100,000		Page 5-6
Retard roller	1,000	100,000		Page 5-7
Other rollers	1,000	—		Page 5-8
Contact glass & FBS glass	1,000	—		Page 5-9
White plate	1,000	—		Page 5-9
Stamp ✻	—	3,000	1	Page 5-10
Exposure Lamp ✻	—	1,000 hours (continuos lighting)	1	Page 5-52

✻: It is not maintenance parts. However, please replace when it becomes not work.

❑ Image Transfer Section

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Image Transfer Roller	—	150,000	1	Page 5-11
Comb Electrode	60,000	—	1	Page 5-11
Pre-Image Transfer Guide Plate	60,000	—	1	Page 5-12

❑ Developing Section

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Imaging Cartridge (Drum Cartridge)	—	67,000	1	Page 5-13
Toner bottle	—	11,000	1	See Operating Instructions

❑ Toner Hopper Unit

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Ozone Filter	—	100,000	1	Page 5-12

❑ Fusing Section

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Fusing Unit	—	300,000	1	Page 5-14

<Options>

❑ Paper Feed Unit (2nd , 3rd, 4th, 5th cassette)

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Paper Take-Up Roll	❍	120,000	2	Page 6-19
Vertical Transport Roller	❍	—	1	Page 6-19
Vertical Transport Roll	❍	—	2	Page 6-19

Note: Replace the expansion cassette when the number of sheets of paper that have through it reaches 120,000.

❑ Large Capacity Cassette (LCC)

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Paper Take- Up Roll 1	❍	300,000	1	Page 6-46
Paper Take- Up Roll 2	❍	300,000	2	Page 6-46
Roll with torque limiter	❍	—	1	Page 6-49
Feed Roll *	❍	200,000	1	Page 6-48
Separator Roll *	❍	200,000	1	Page 6-48
Torque Limiter Assy.*	❍	200,000	1	Page 6-48
Vertical Transport Roller	❍	—	1	Page 6-49
Vertical Transport Roll	❍	—	2	Page 6-49

Note: Replace the parts marked with * at the same time.

❑ Duplex Unit

Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Duplex Unit Transport Roller 1 and 2	❍	—	2	Page 6-83
Duplex Unit Transport Roll 1 and 2	❍	—	4	Page 6-83
Exhaust Vent area	60,000	—	1	Page 6-84

❑ 2-Bin/Shift Tray Unit

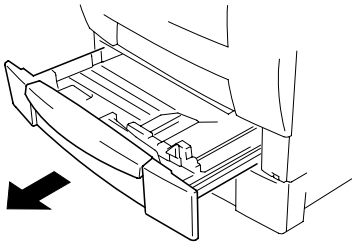
Parts Name	Maintenance Cycle (pages)		QTY	Reference Page
	Clean	Replace		
Exit Roller	300,000	—	1	Page 6-69

Note: "❍" means to clean the mechanism when a paper take-up or transport failure occurs.

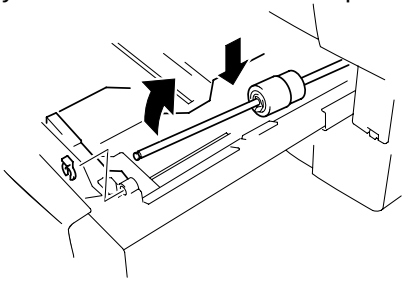
5.1.1 Paper Take-Up/Transport Section

(1) Replacement of the Paper Take-Up Roll

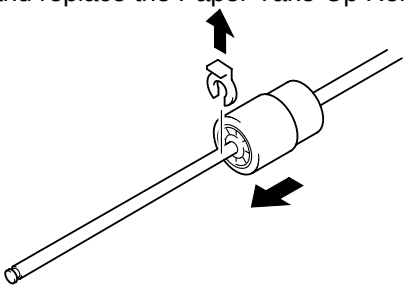
1. Slide out the MP Cassette.



2. Lock the Paper Lifting Plate.
3. Snap off one C-clip of the Paper Take-Up Roll Assy.
4. Slide the Paper Take-Up Roll Assy to the rear so that it can be pulled off the bushing at the front.

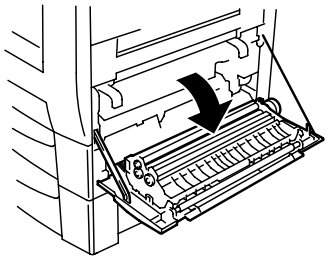


5. Snap off one C-clip and remove and replace the Paper Take-Up Roll.

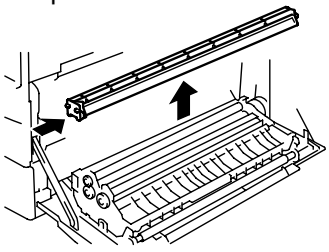


(2) Replacement of the Paper Dust Remover

1. Open the Side Cover.

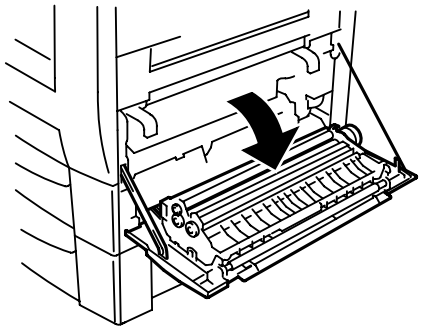


2. Remove the Paper Dust Remover and replace it.

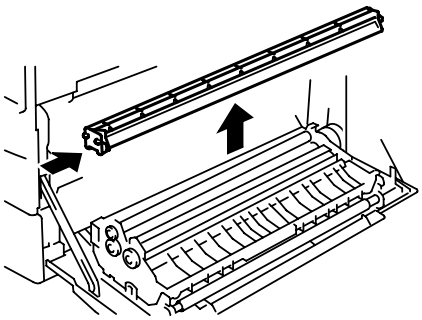


(3) Cleaning of the Paper Dust Remover

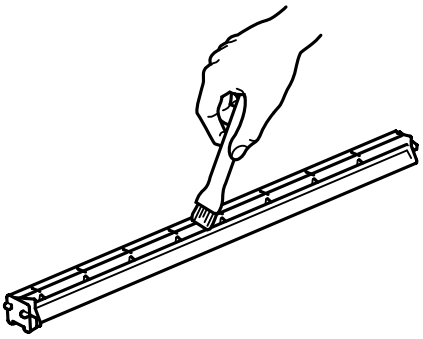
1. Open the Side Cover.



2. Remove the Paper Dust Remover.

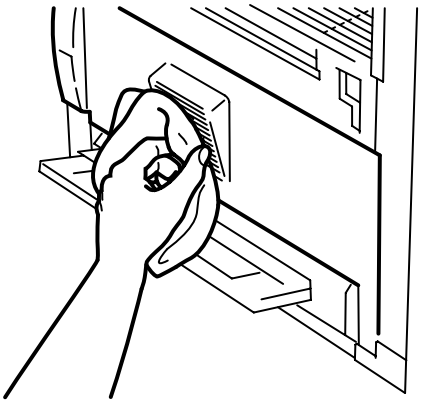


3. Using a brush, whisk dust and dirt off the Paper Dust Remover.



(4) Cleaning of the Side Cover

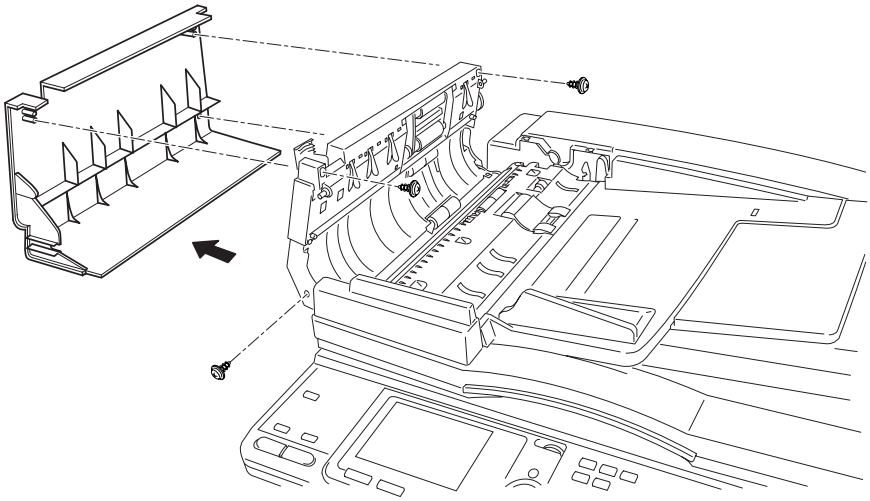
Using a soft cloth dampened with alcohol, wipe the Side Cover.



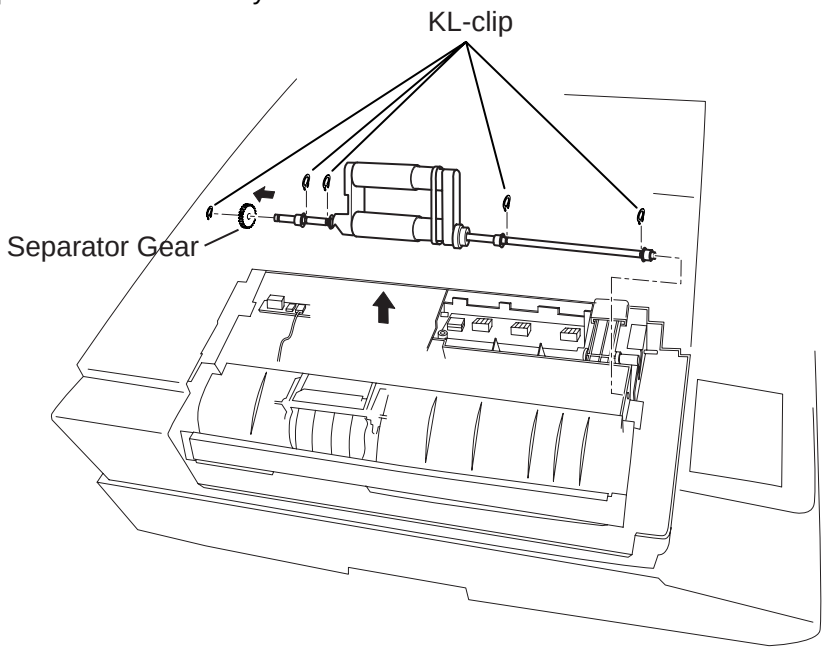
5.1.2 Scanner Section

(1) Removal of the separator roller

1. Remove the Tx cover.

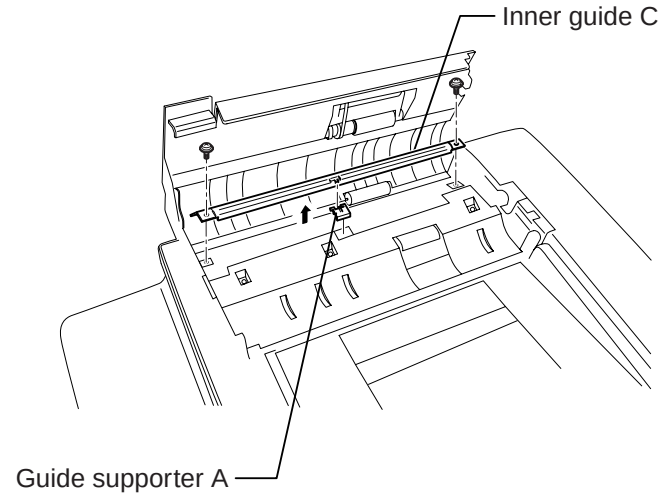


2. Remove five KL-clips.
3. Remove the separator gear.
4. Remove the separator roller assembly.

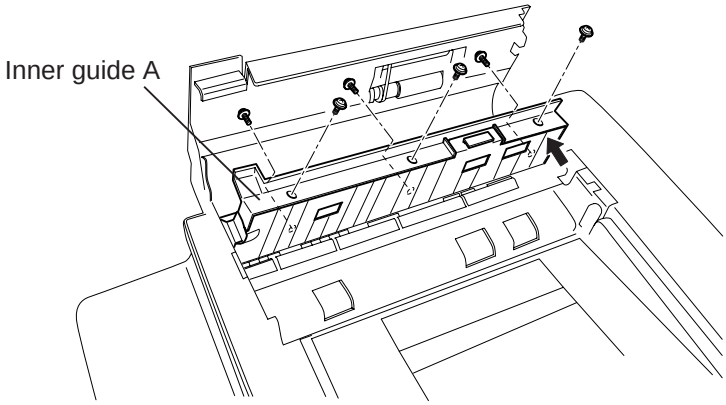


(2) Removal of the retard roller

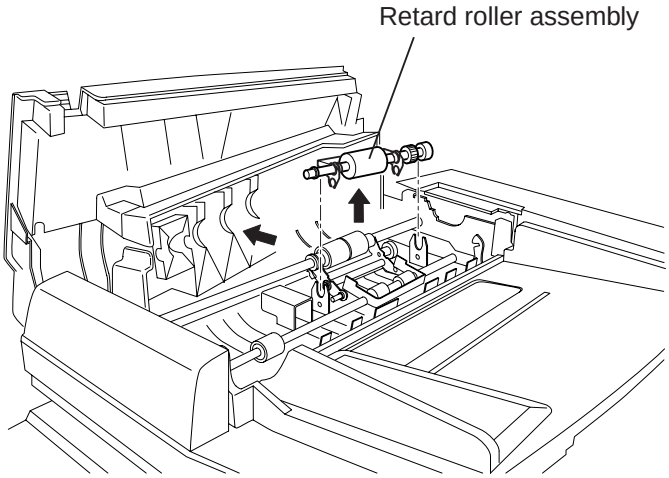
1. Remove two screws and Inner guide C.
2. Remove Guide supporter A.



3. Remove six screws and open the Inner guide A assembly.

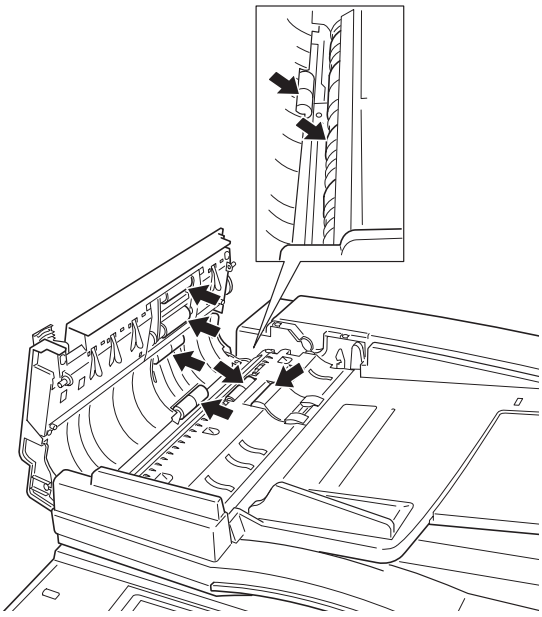


4. Remove the Retard roller assembly.

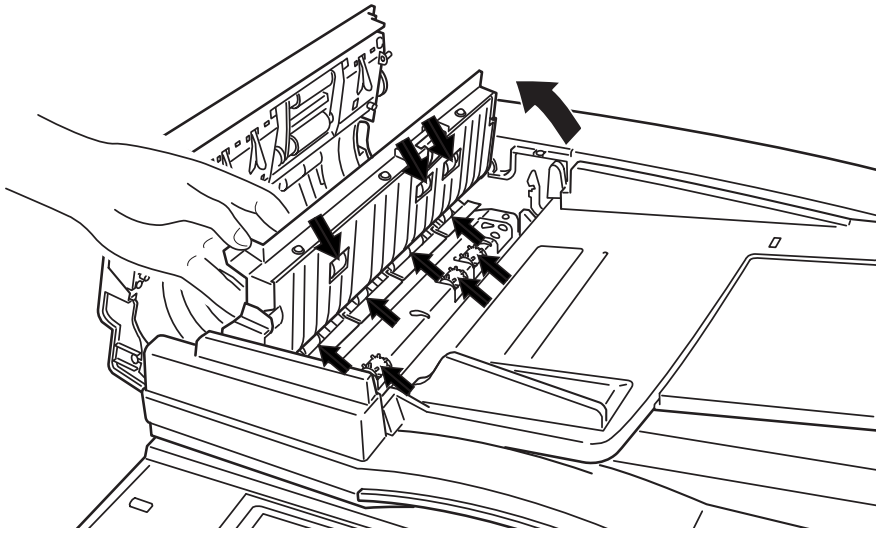


(3) Cleaning of the Tx rollers

1. Open the Tx cover.
2. Using a soft cloth dampened with alcohol, wipe the face of the Tx rollers. Rotate the rollers by hand to allow cleaning of the entire roller surface.

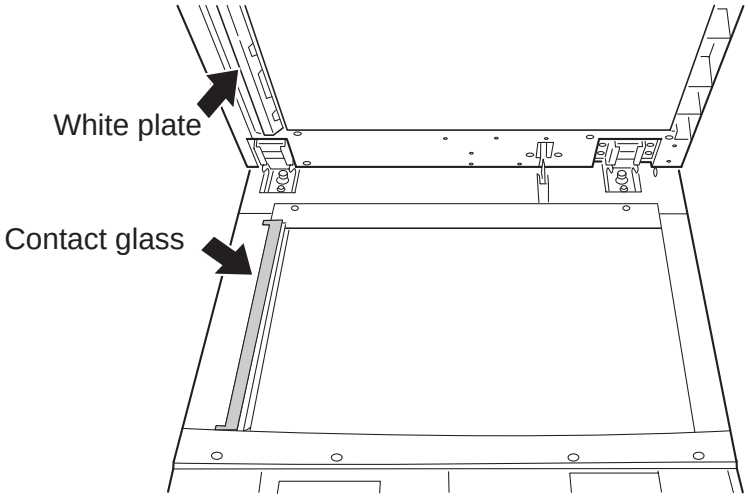


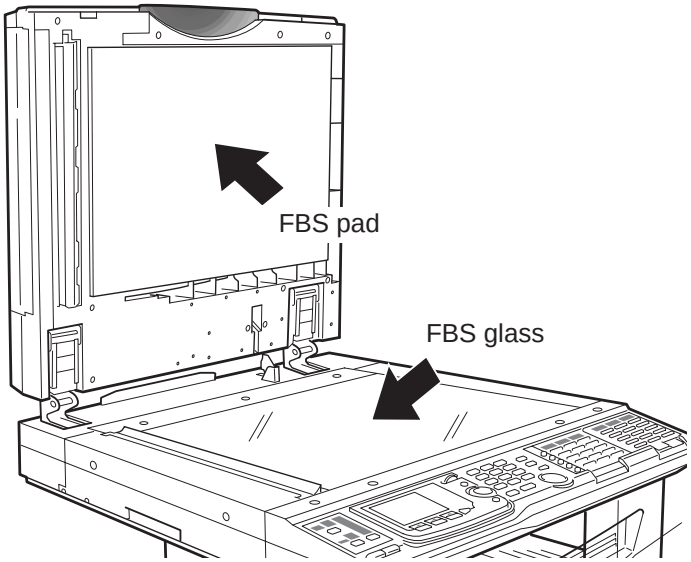
3. Open the inner cover.
   Note: You must hold the cover open. It won't stay open by itself.
4. Using a soft cloth dampened with alcohol, wipe the face of the Tx rollers. Rotate the rollers by hand to allow cleaning of the entire roller surface.



(4) Cleaning of the contact glass & FBS glass.

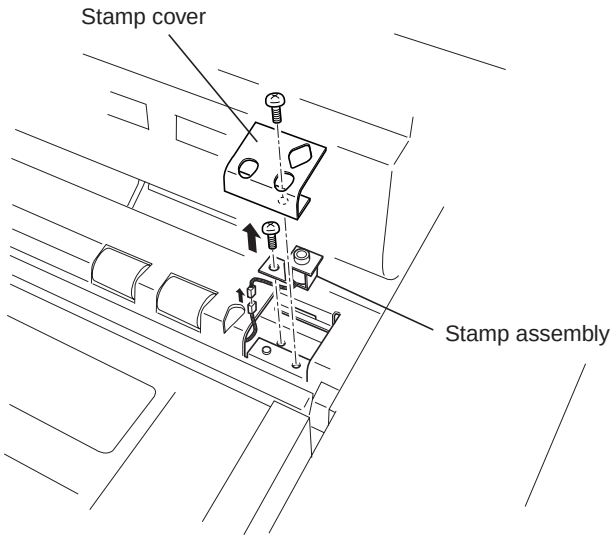
Using a soft cloth dampened with alcohol, wipe the face of the contact glass, white plate, FBS glass and FBS pad.





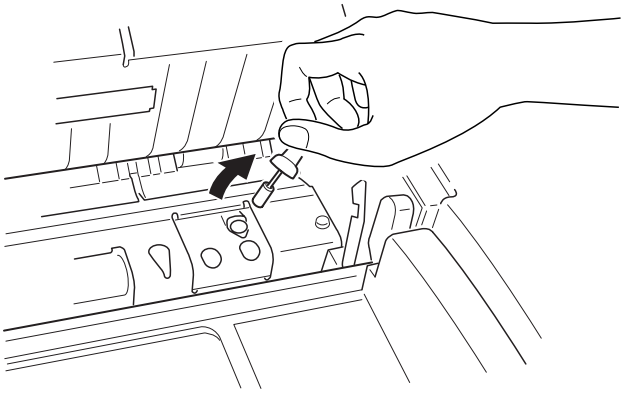
(5) Removing the Stamp assembly

1. Open the Tx cover and Inner cover.
   Note: You must hold the Inner cover open. It won't stay open by itself.
2. Remove one screw and stamp cover.
3. Remove one screw and connector, and then remove the stamp assembly.

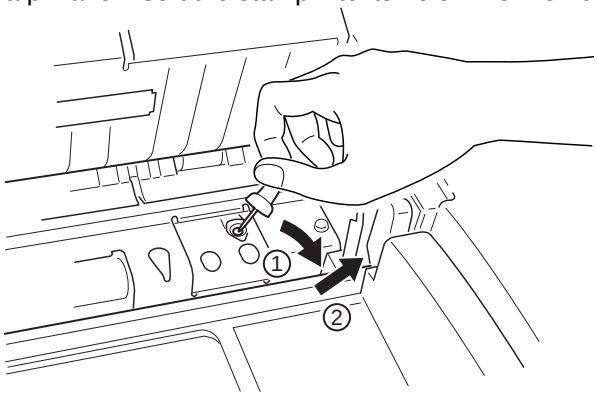


(6) Changing the Stamp

1. Open the Tx cover and Inner cover.
   Note: You must hold the Inner cover open. It won't stay open by itself.
2. Stick the stamp with a pin, then pull out the stamp as shown below.



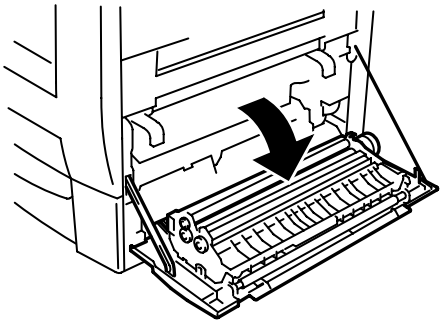
3. Stick the new stamp with a pin and insert the stamp into its hole. Then remove the pin as shown.



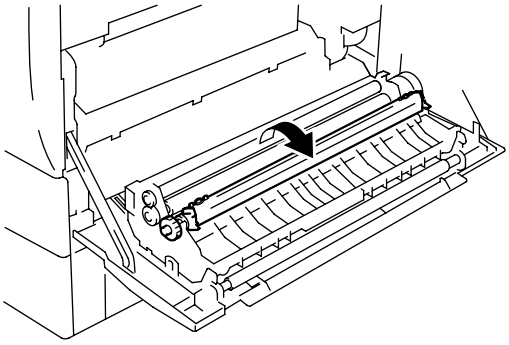
5.1.3 Image Transfer Section

(1) Removal of the Image Transfer Roller

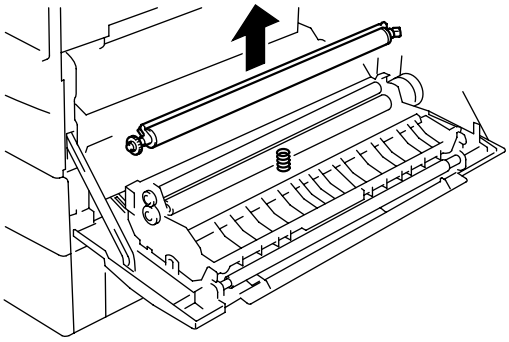
1. Open the Side Cover.



2. Raise the Image Transfer Guide Plate.

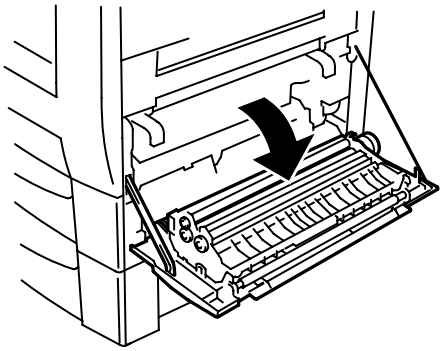


3. Remove the Image Transfer Roller and replace it.
   Note: Do not touch the surface of the Image Transfer Roller directly with bare hands.



(2) Cleaning of the Comb Electrode

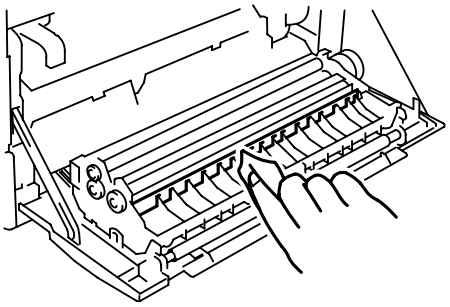
1. Open the Side Cover.



2. Using a soft cloth dampened with alcohol, wipe the Comb Electrode.

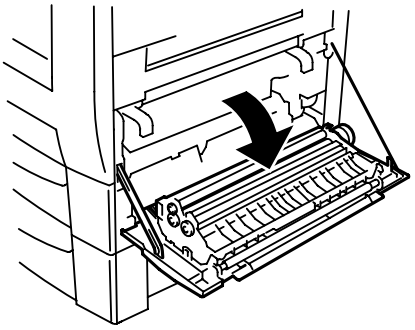
Notes:

- Make sure the alcohol does not touch the surface of the Image Transfer Roller.
- When wiping the Comb Electrode, make sure the cloth is not caught by the ends of the combs.



(3) Cleaning of the Pre-Image Transfer Guide Plate

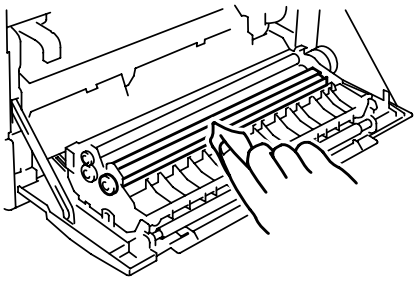
1. Open the Side Cover.



2. Using a soft cloth dampened with alcohol, wipe the Pre-Image Transfer Guide Plate.

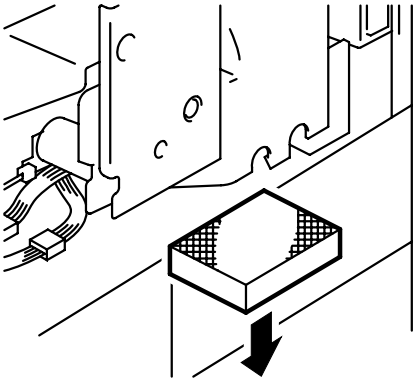
NOTE

Make sure the alcohol does not touch the surface of the Image Transfer Roller.



(4) Replacement of the Ozone Filter

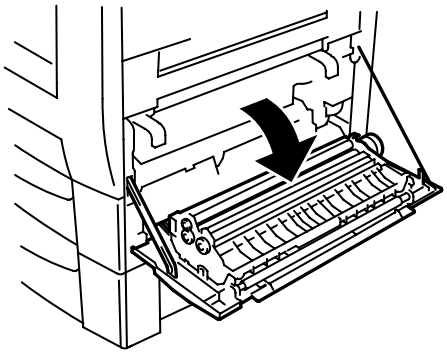
1. Remove the Rear Lower Cover.
2. Pull out the Ozone Filter and replace it.



5.1.4 Developing Section

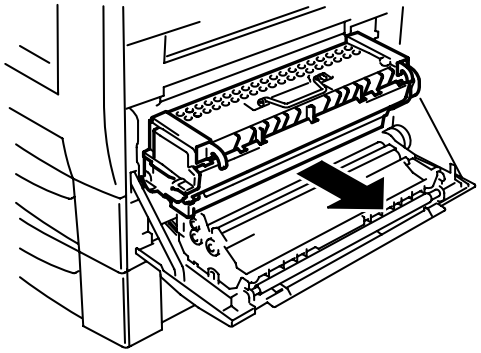
(1) Removal of the Imaging Cartridge (Drum Cartridge)

1. Open the Side Cover.



2. Holding onto the green handles, slide the Imaging Cartridge part of the way out.
3. Then grasp the handle on top of the cartridge and pull the cartridge out.

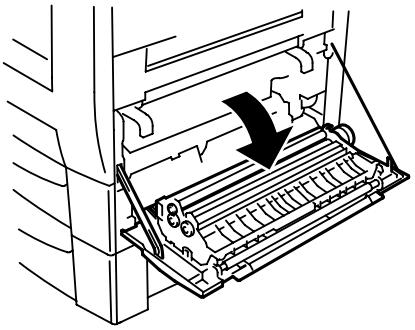
Note: When installing the Imaging Cartridge, push it all the way into the machine.
If the cartridge is not properly installed, the PC Drum protective shutter of the cartridge may not be opened or may even be damaged.



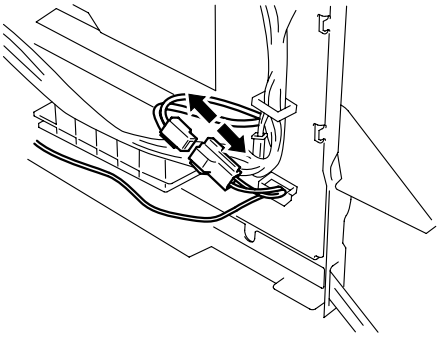
5.1.5 Fusing Section

(1) Removal of the Fusing Unit

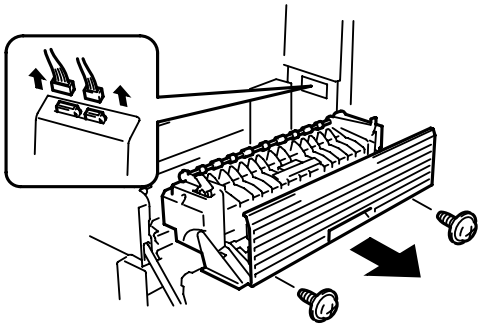
1. Open the Side Cover.



2. Remove the Front Cover.
3. Unplug one connector at the front.

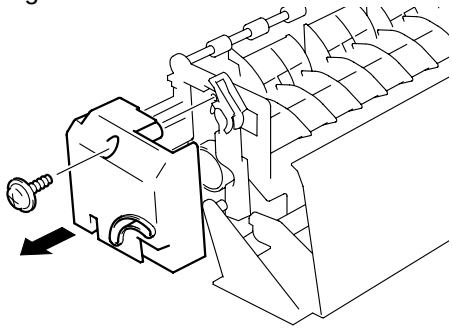


4. Open the Exit Cover and unplug two connectors in the rear.
5. Close the Exit Cover and remove two screws and the Fusing Unit.

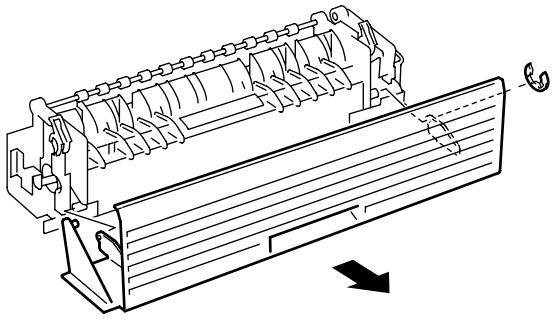


(2) Removal of the Fusing Roller Heater Lamp, Fusing Right Roller, Fusing Left Roller, Fusing Roller Thermistor, Fusing Roller Thermostat, and Fusing Roller Heater Lamp Fuse

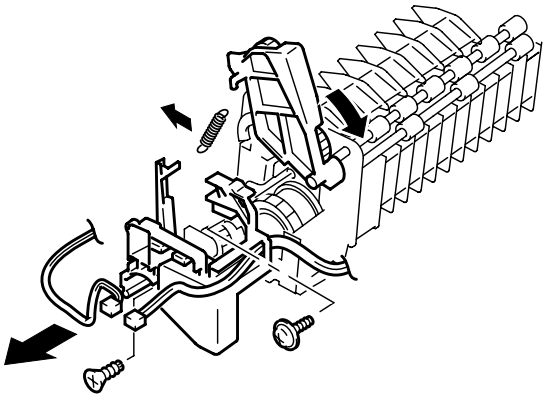
1. Open the Exit Cover.
2. Remove one screw and the Fusing Front Cover.



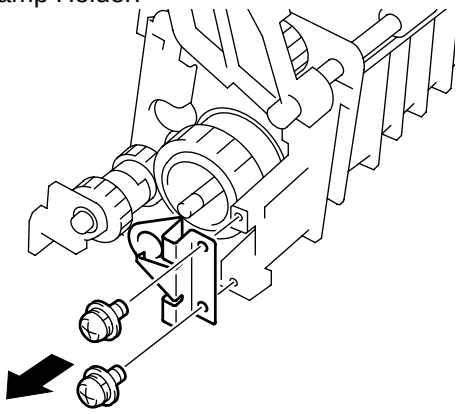
3. Snap off one E-ring and remove the Exit Cover.



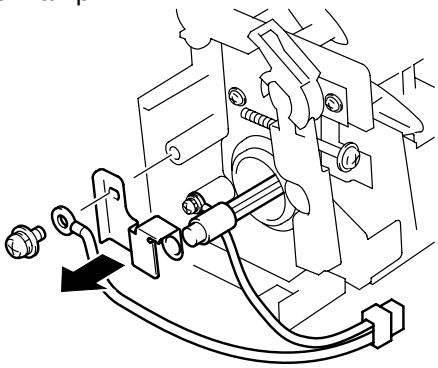
4. Unhook one spring to free the Idle Lever.
5. Remove two harnesses.
6. Remove two screws and the Rear Cover.



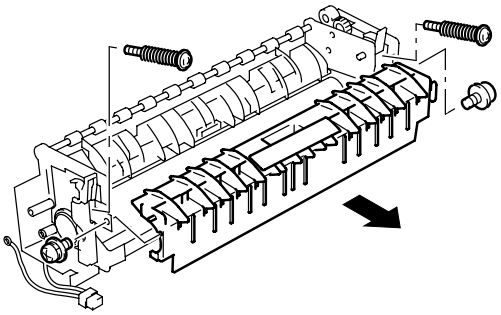
7. Remove two screws and the rear Lamp Holder.



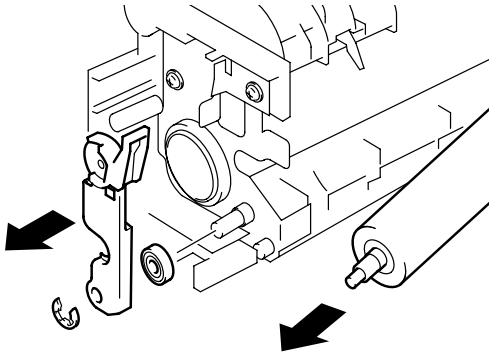
8. Remove one screw and the front Lamp Holder.
9. Remove the Fusing Roller Heater Lamp.



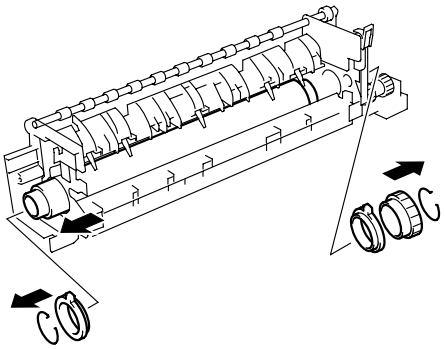
10. Remove two screws and the Fusing Rear Guide Assy.
11. Remove two pressure springs.



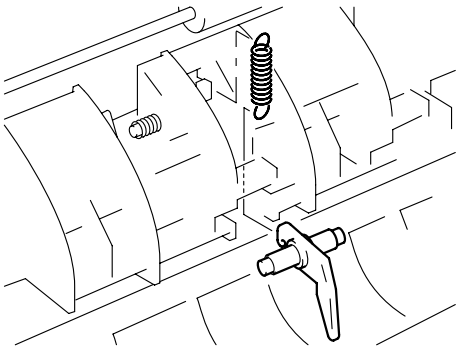
12. Snap off one E-ring and remove the front Misfeed Clearing Lever Assy and bearing.
13. Remove the Fusing Right Roller.



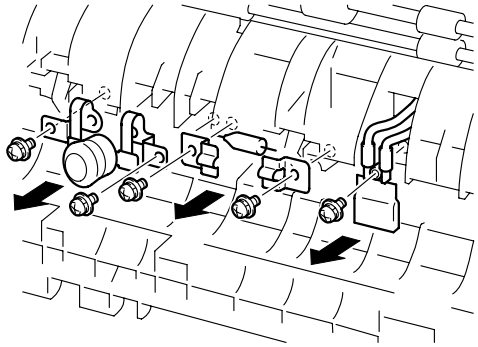
14. Snap off two retaining rings.
15. Remove one gear and two bushings.
16. Remove the Fusing Left Roller.



Note: When the Fusing Left Roller is removed, it can cause the spring to come off the Separator Finger. After the Fusing Left Roller has later been reinstalled, be sure to hook the spring onto the Separator Finger.



17. Remove one screw and the Fusing Roller Ther-mistor.
18. Remove two screws and the Fusing Roller Heater Lamp Fuse.
19. Remove two screws and the Fusing Roller Ther-mostat.



5.2 Re/Disassemble

Before disassembling, disconnect the power cord and line cord.

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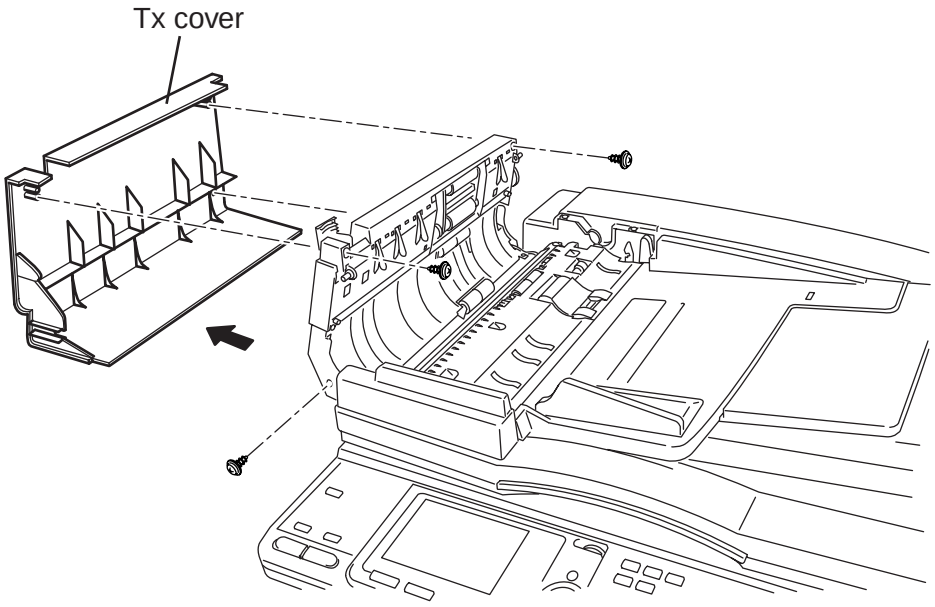
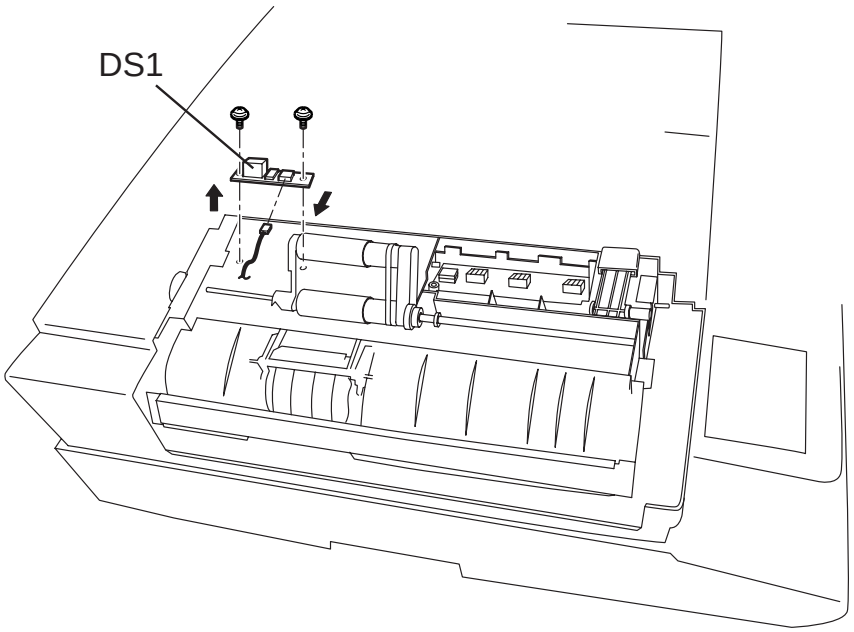
5.2.1 Tx cover

1. Open the ADF cover.
2. Remove the three Tx cover mounting screws and Tx cover.



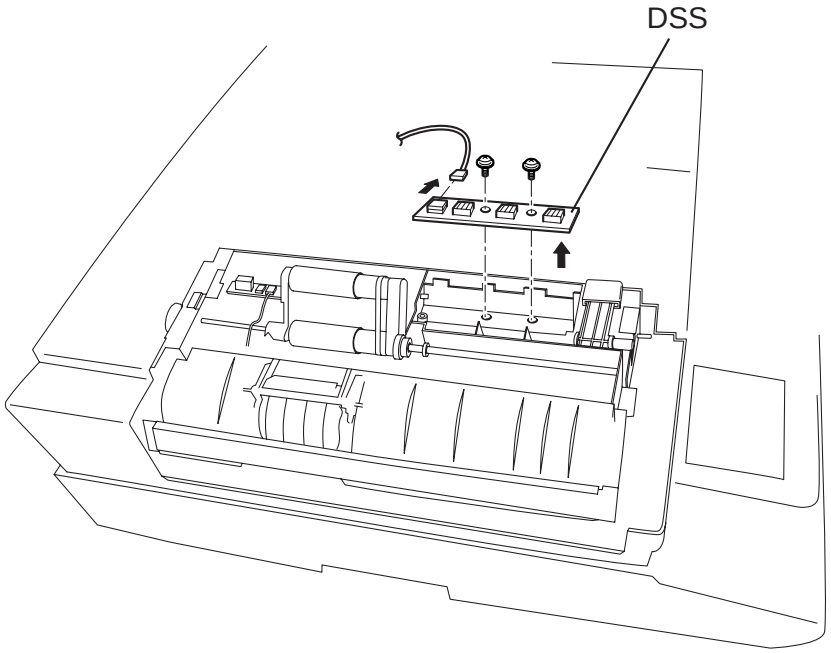
5.2.2 PCB DS1

1. Remove the Tx cover. (See 5.2.1)
2. Remove two screws and one connector, then remove the PCB DS1.



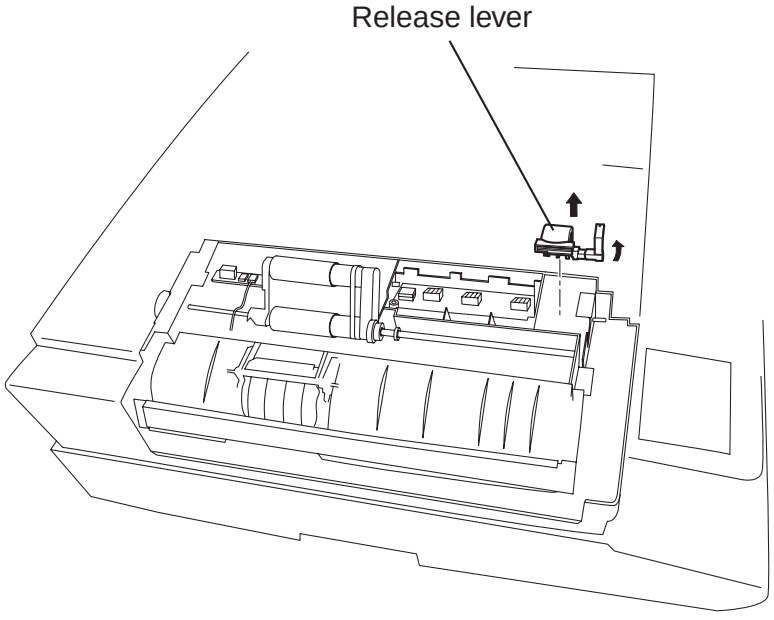
5.2.3 PCB DSS

1. Remove the Tx cover. (See 5.2.1)
2. Remove two screws and one connector, then remove the PCB DSS.



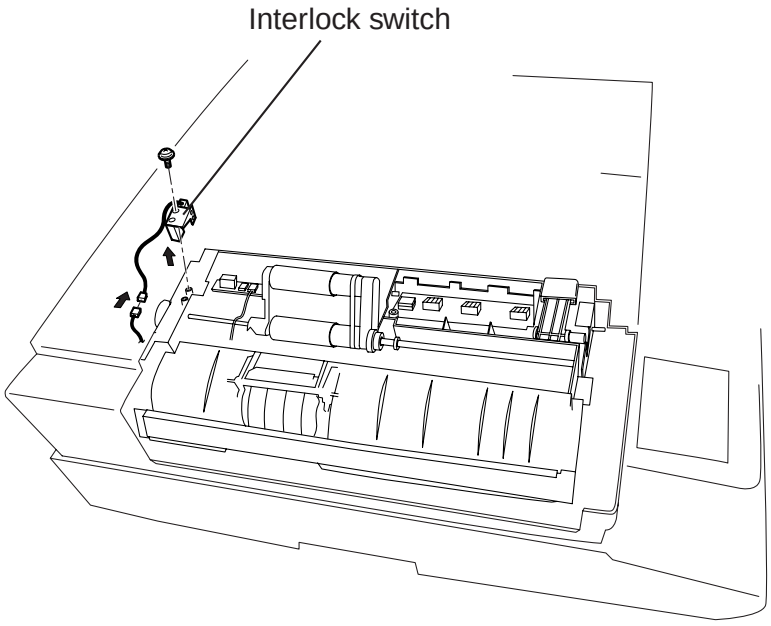
5.2.4 Release lever

1. Remove the Tx cover. (See 5.2.1)
2. Remove the release lever.



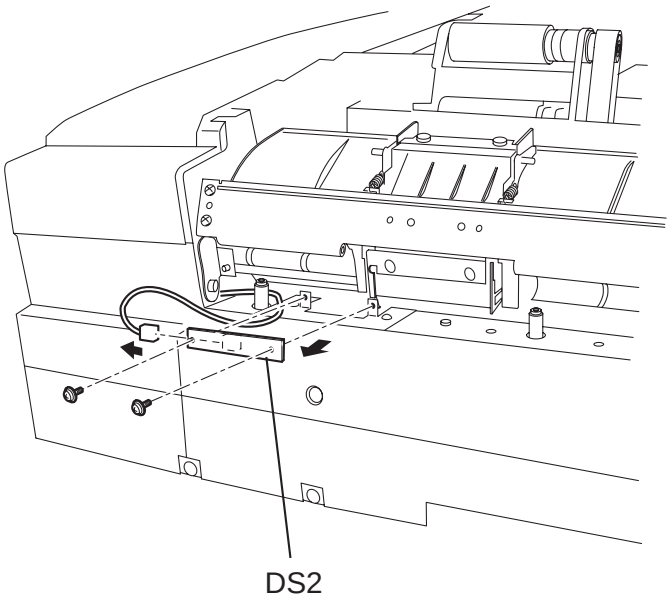
5.2.5 Interlock switch

1. Remove the Tx cover. (See 5.2.1)
2. Remove one screw and one connector, then remove the Interlock switch.



5.2.6 PCB DS2

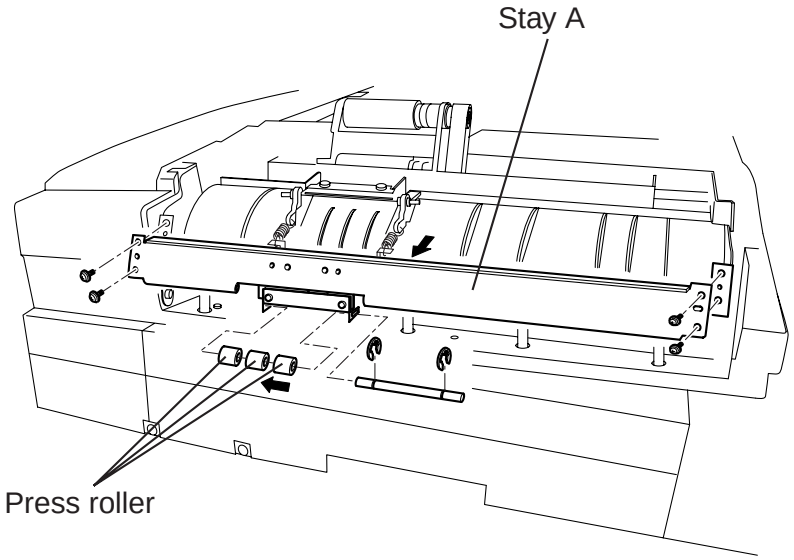
1. Remove the Tx cover. (See 5.2.1)
2. Remove two screws and one connector, then remove the PCB DS2.



Note: The auto adjustment of DS2 (see page 3-129) must be made when you replace the DS2.

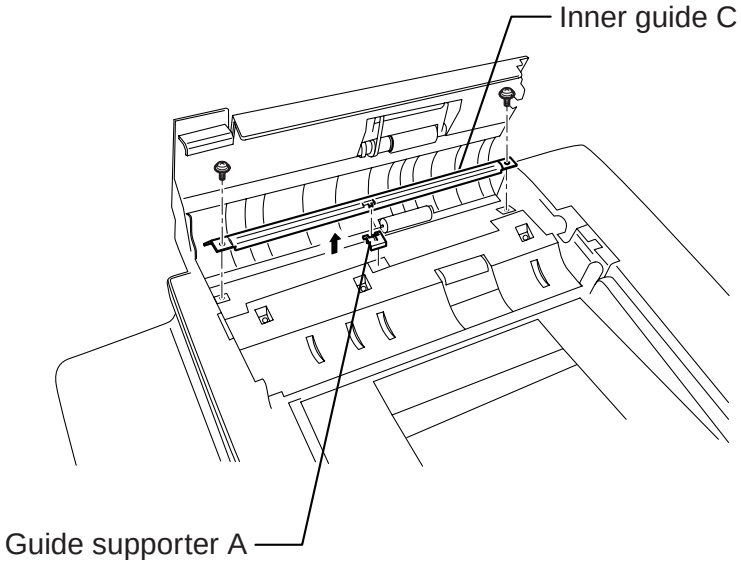
5.2.7 Press roller

1. Remove the Tx cover. (See 5.2.1)
2. Remove four screws and stay A.
3. Remove E-rings and Press roller.



5.2.8 Exit roller

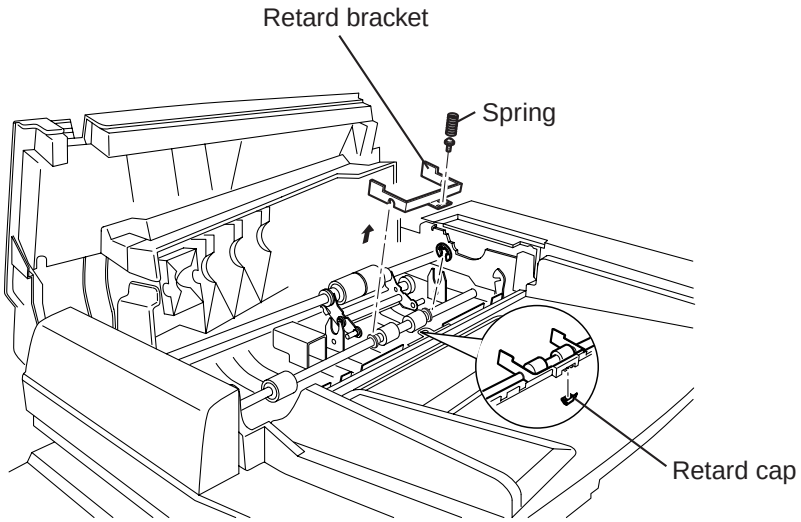
1. Remove two screws and Inner guide C.
2. Remove Guide supporter A.



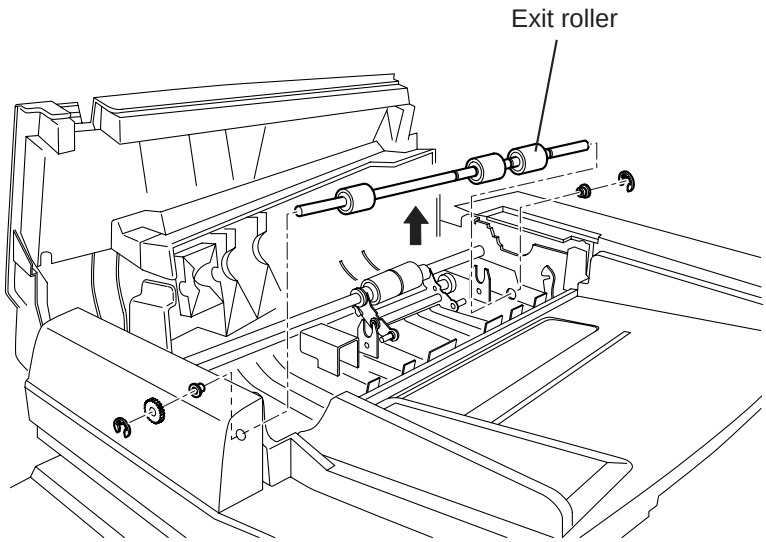
3. Remove six screws and Inner guide A assembly. (See 5.2.15.)

4. Remove the retard cap.

5. Remove one E-ring and Retard bracket.

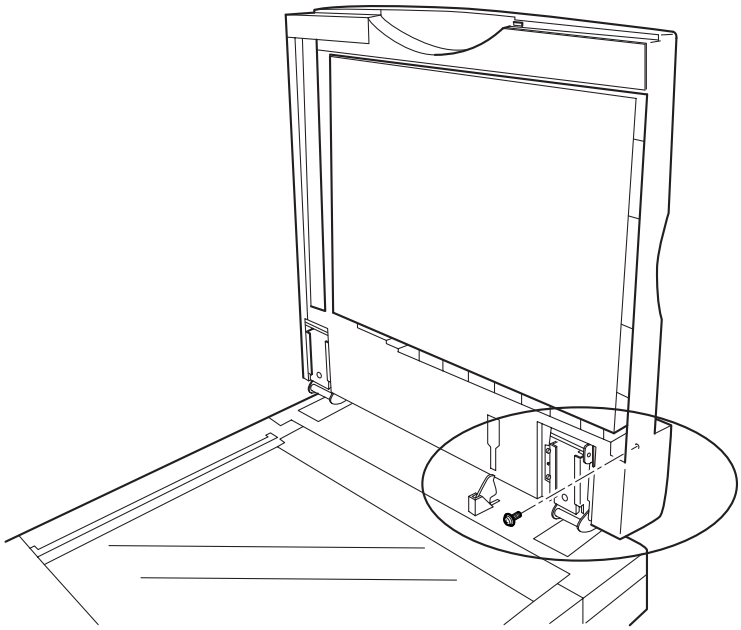


6. Remove two E-rings and Exit roller.

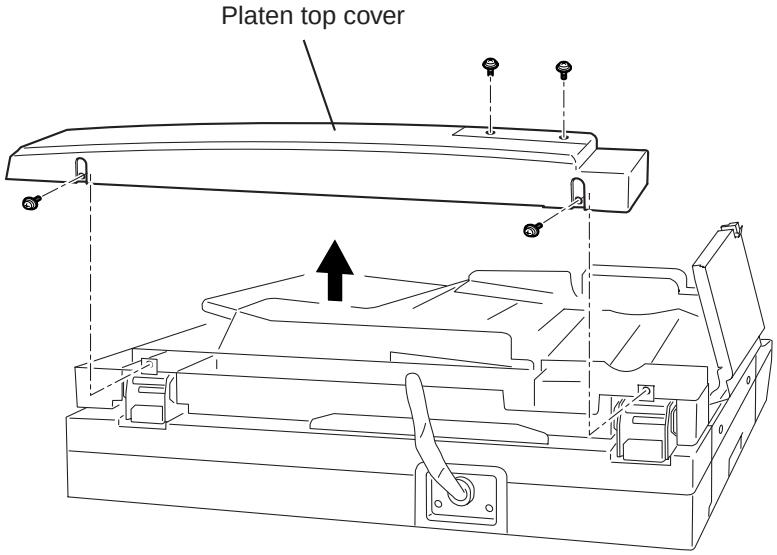


5.2.9 Platen top cover

1. Open the platen cover.
2. Remove one screw and then close the platen cover.

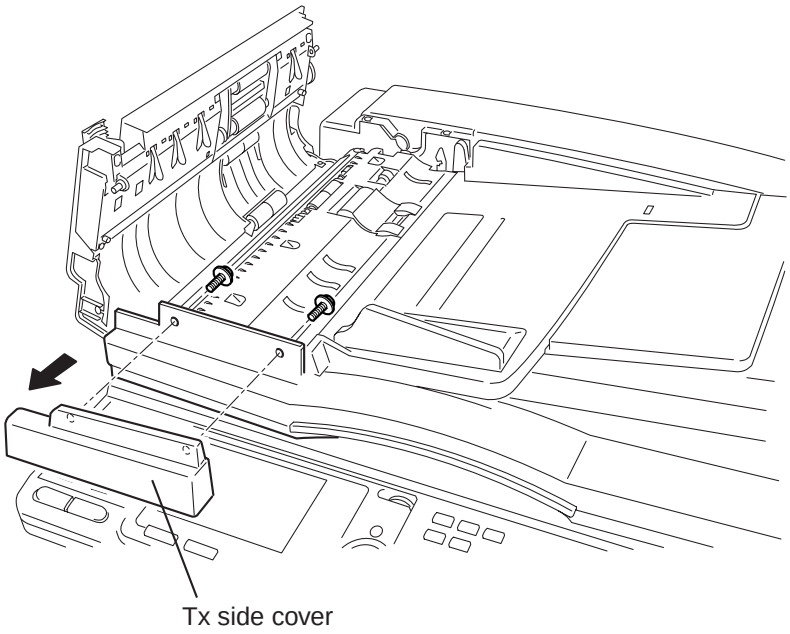


3. Open the ADF cover.
4. Remove four screws and platen top cover.



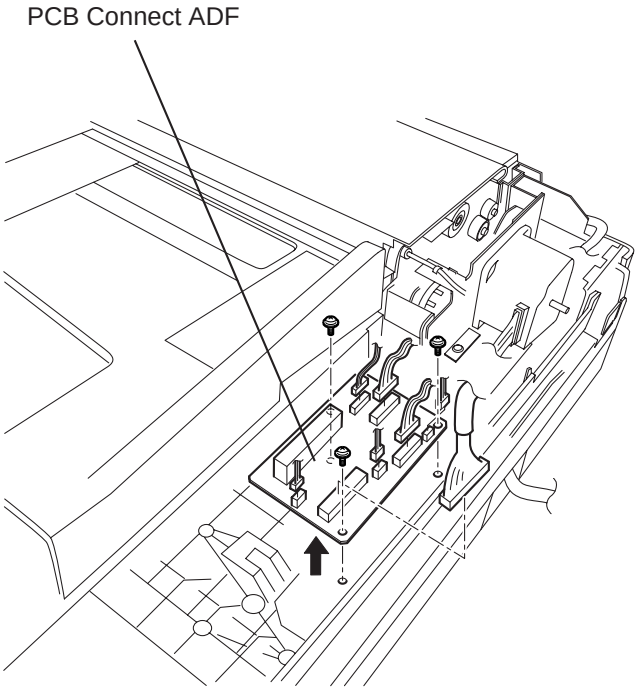
5.2.10 Tx side cover

1. Open the ADF cover.
2. Remove two screws and Tx side cover.



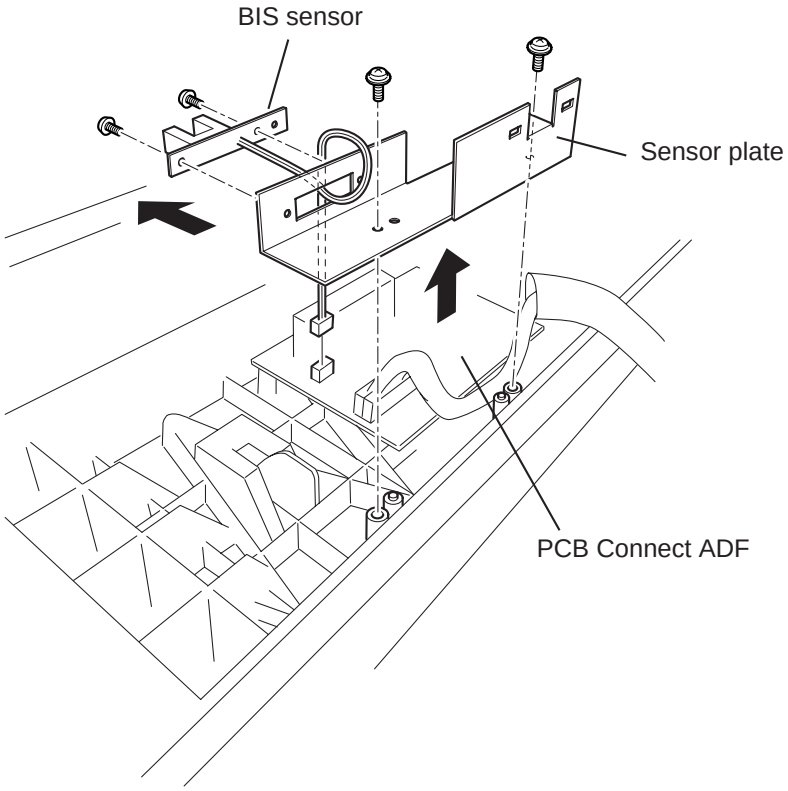
5.2.11 PCB Connect ADF

1. Remove the platen top cover. (See 5.2.9.)
2. Remove three screw and all connectors, then remove the PCB Connector ADF.



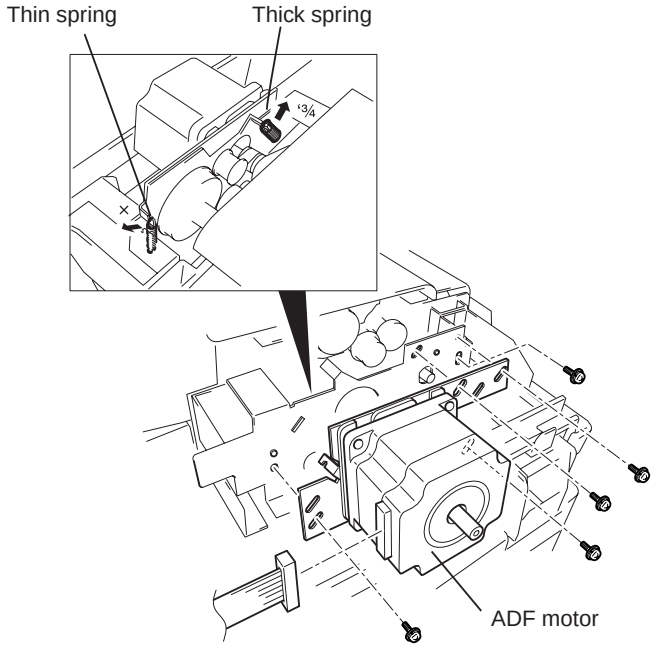
5.2.12 BIS sensor

1. Remove the platen top cover. (See 5.2.9.)
2. Disconnect the connector (P124) from the PCB Connect ADF.
3. Remove two screws and Sensor plate.
4. Remove two screws and BIS sensor.



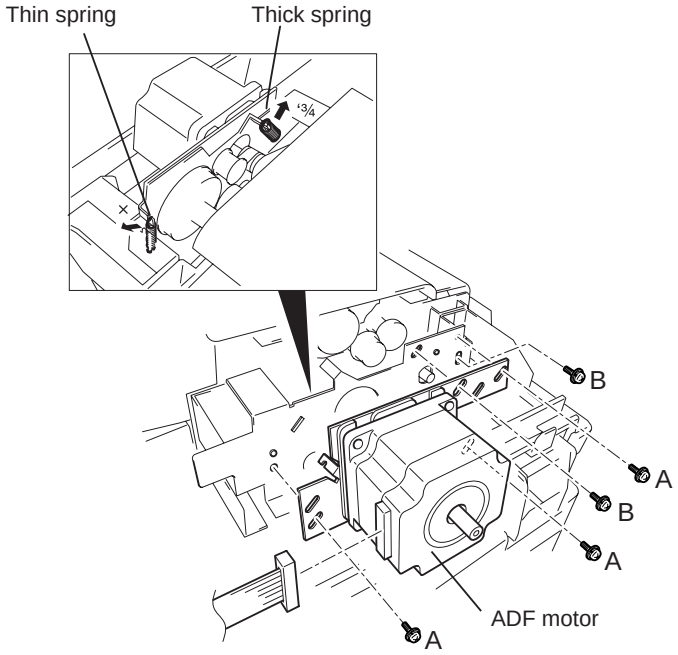
5.2.13 ADF motor

1. Remove the platen top cover. (See 5.2.9.)
2. Disconnect the connector of the ADF motor.
3. Remove two springs.
4. Remove five screws ADF motor.



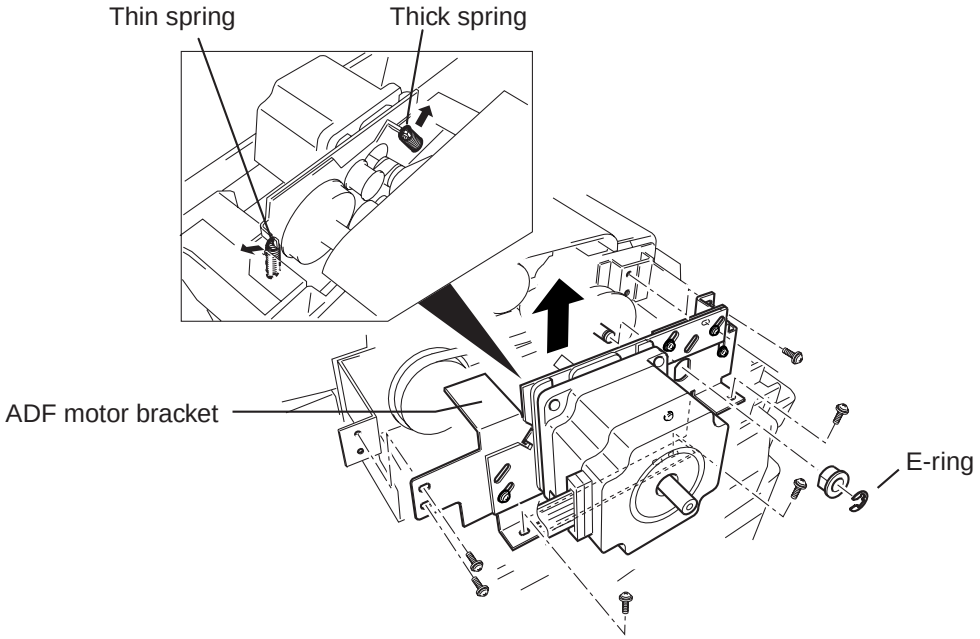
Note: When reassemble the ADF motor, follow the instructions below:

1. Attach the ADF motor with five screws loosely.
2. Attach the thick spring.
3. Secure the three screws shown with A in the illustration.
4. Attach the thin spring.
5. Secure the two screws shown with B in the illustration.
   Note: Confirm the belt is not loose.

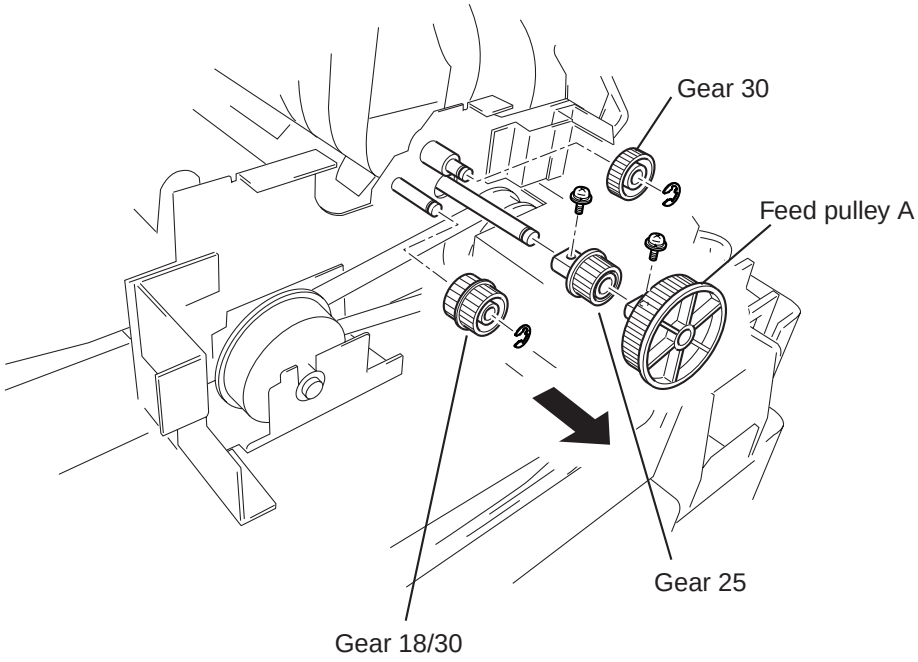


5.2.14 Gear of the ADF section

1. Remove the platen top cover. (See 5.2.9.)
2. Remove the ADF motor. (See 5.2.13.)
3. Remove the E-ring.
4. Remove seven screws and ADF Motor bracket.

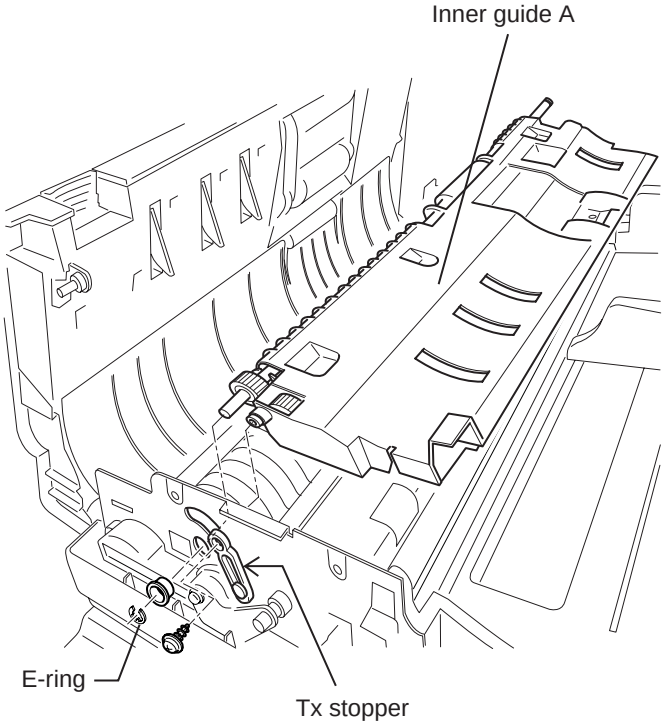


5. Remove screws of the Feed pulley A and Gear 25.
6. Remove E-ring of the Gear 30 and Gear 18/30.
7. Remove Feed pulley, Gear 25, Gear 30 and Gear 18/30.



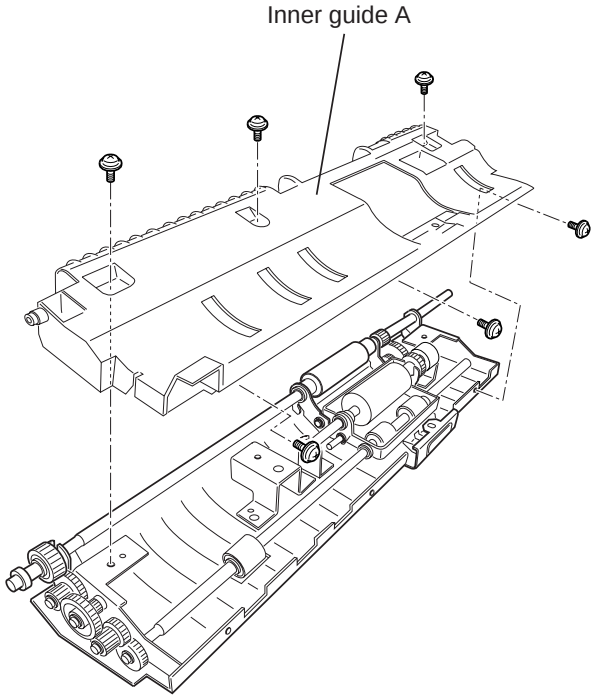
5.2.15 Inner guide A assembly

1. Remove the platen top cover. (See 5.2.9.)
2. Remove the ADF motor bracket. (See step 4 of 5.2.14.)
3. Remove the Feed pulley A, Gear 25 and Gear 30. (See step 5 to 7 of 5.2.14.)
4. Remove the Tx side cover. (See 5.2.10.)
5. Remove one screw and Tx stopper.
6. Remove two screws and inner guide C. (See step 1 of 5.2.8.)
7. Remove the guide supporter A. (See step 2 of 5.2.8.)
8. Remove E-ring of feed roller.
9. Remove the Inner guide A assembly.

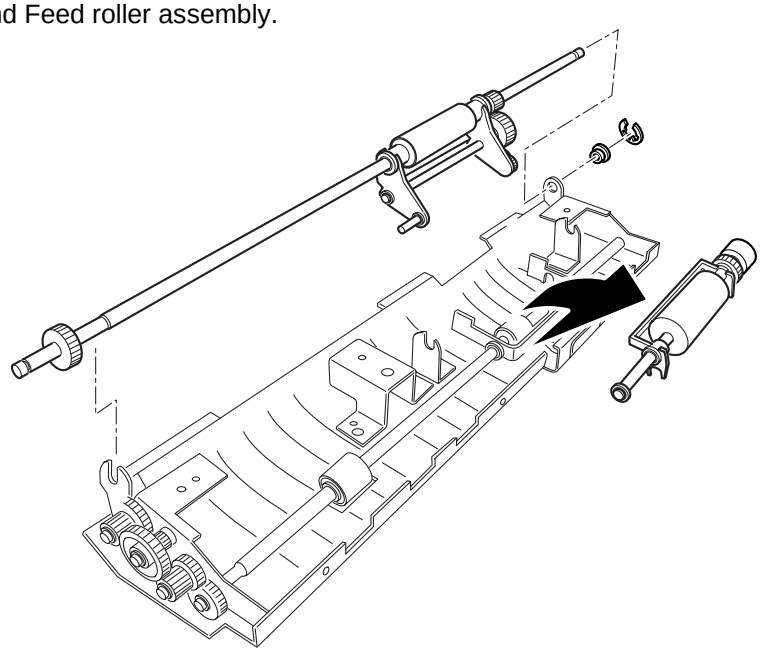


5.2.16 Feed roller assembly

1. Remove the platen top cover. (See 5.2.9.)
2. Remove the ADF motor bracket. (See step 4 of 5.2.14.)
3. Remove the Feed pulley A, Gear 25 and Gear 30. (See step 5 to 7 of 5.2.14.)
4. Remove the Tx side cover. (See 5.2.10.)
5. Remove the Inner guide A assembly. (See 5.2.15)
6. Remove six screws and inner guide A.



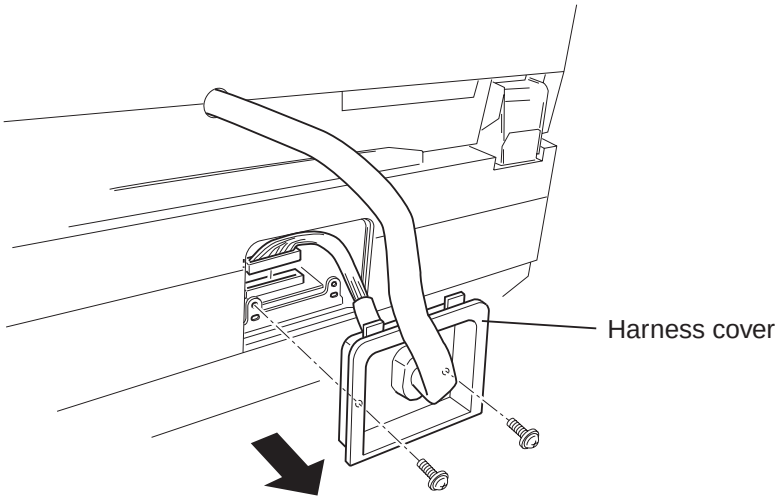
7. Remove the retard roller assembly. (See page 5-7.)
8. Remove E-ring and Feed roller assembly.



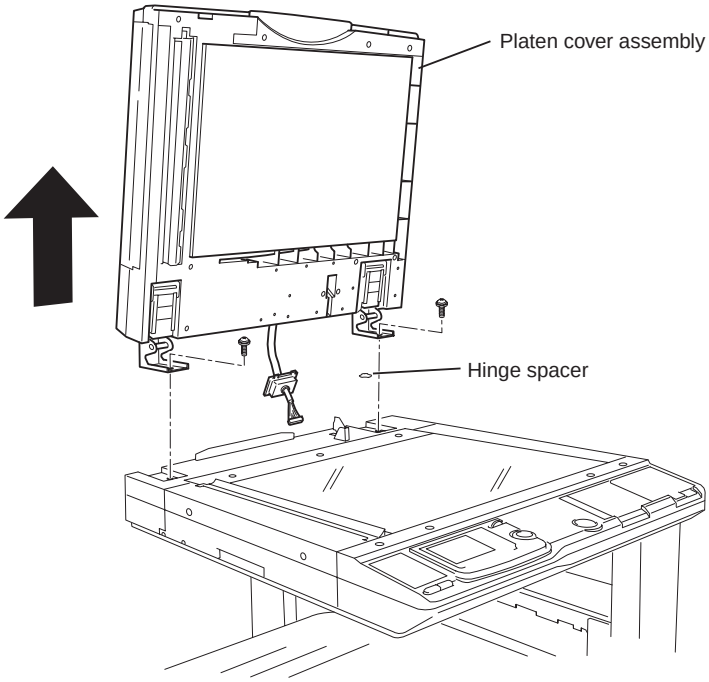
5.2.17 Platen cover assembly

Note: Before disassemble the platen cover assembly, you should write down the number (1, 2 or 3) on the hinge spacer (see next page). This number will be need when you reassemble the platen cover assembly.

1. Remove two screws and harness cover.
2. Disconnect the harness.

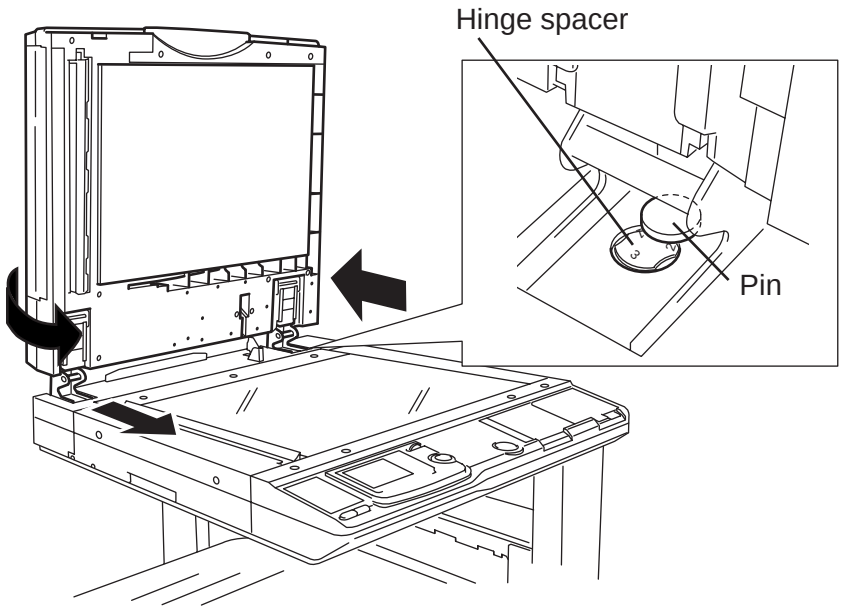


3. Remove two screws and platen cover assembly.
   Note: You must hold the platen cover assembly.



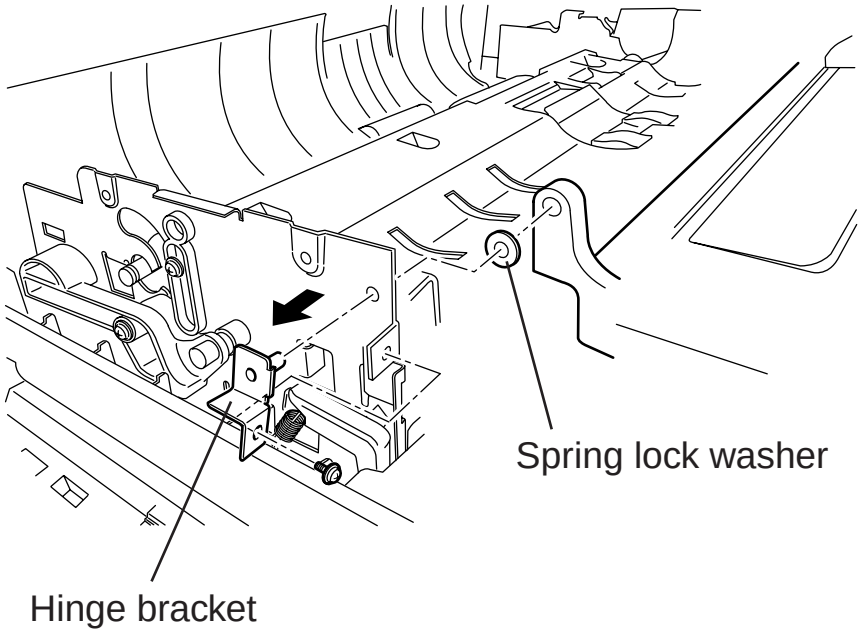
Reassemble the platen cover assembly:

1. Mount the platen cover assembly on the machine.
2. Insert the Hinge spacer into the right hole.
   Note: The number (1, 2 or 3) on the hinge spacer that you wrote down before disassemble the platen cover assembly should be shown.
3. Pull the left side of the platen cover assembly to frontward to hook the pin. And attach the screw loosely.
4. Push the right side of the platen cover assembly to backward to fix the position of platen cover assembly. And secure the right side of platen cover assembly with a screw.
5. Secure the left side of the platen cover assembly.

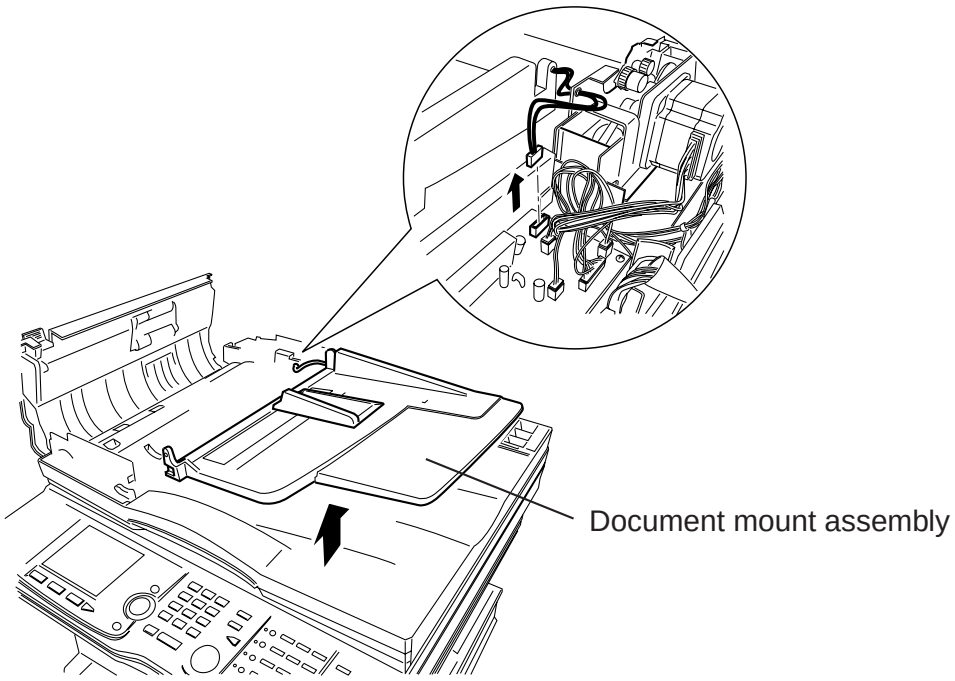


5.2.18 Document mount assembly

1. Remove the platen top cover. (See 5.2.9.)
2. Remove the Tx side cover. (See 5.2.10.)
3. Remove one screw. Then remove the hinge bracket and spring lock washer.

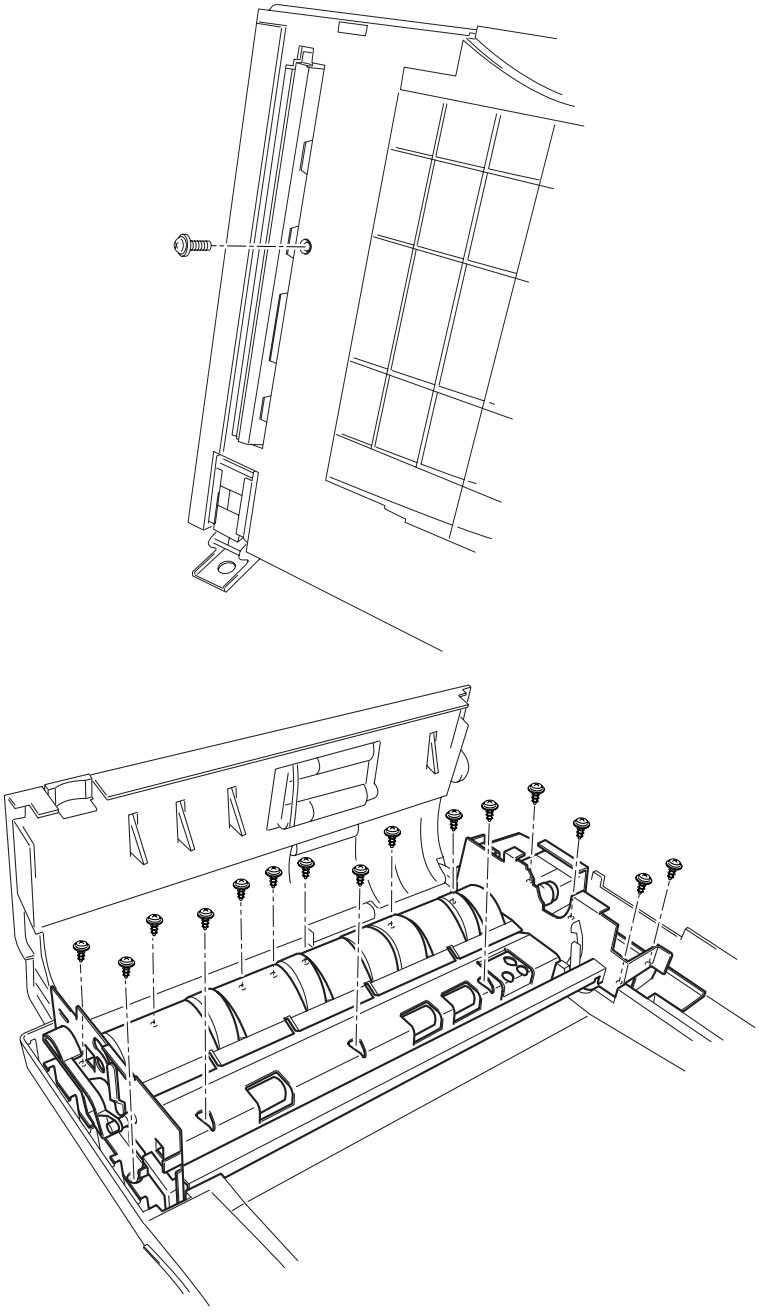


4. Disconnect one connector and Document mount assembly.

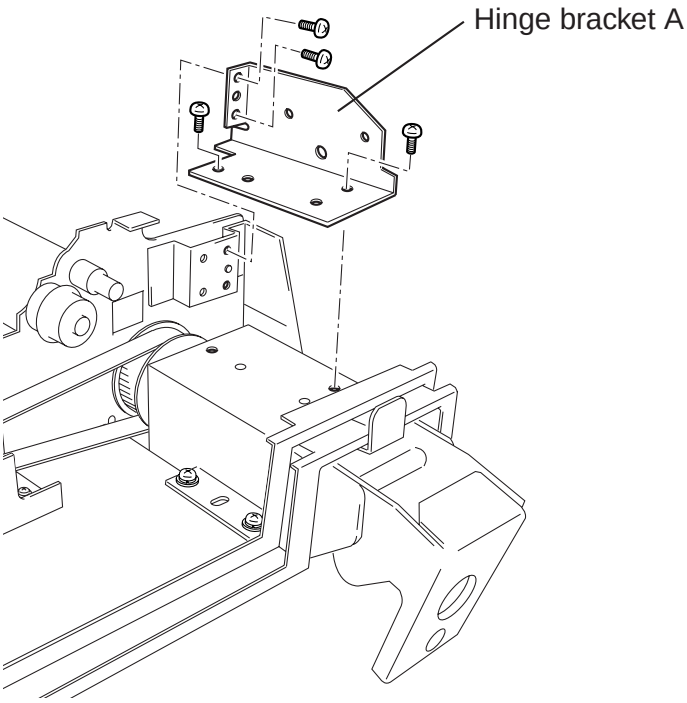


5.2.19 Feed roller assembly

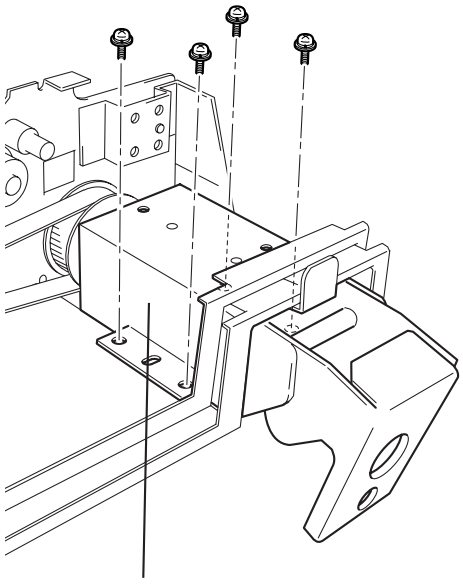
1. Remove the platen cover assembly. (See 5.2.17.)
2. Remove the platen top cover. (See 5.2.9.)
3. Remove the Tx side cover. (See 5.2.10.)
4. Remove the document mount assembly (See 5.2.18.)
5. Remove the ADF motor bracket. (See step 4 of 5.2.14.)
6. Remove the Feed pulley A, Gear 25 and Gear 30. (See step 5 to 7 of 5.2.14.)
7. Remove the Inner guide A assembly. (See 5.2.15)
8. Remove one screw on the bottom side and 15 screws on the upper side of the platen cover assembly. Then separate the ADF section from the platen cover assembly.



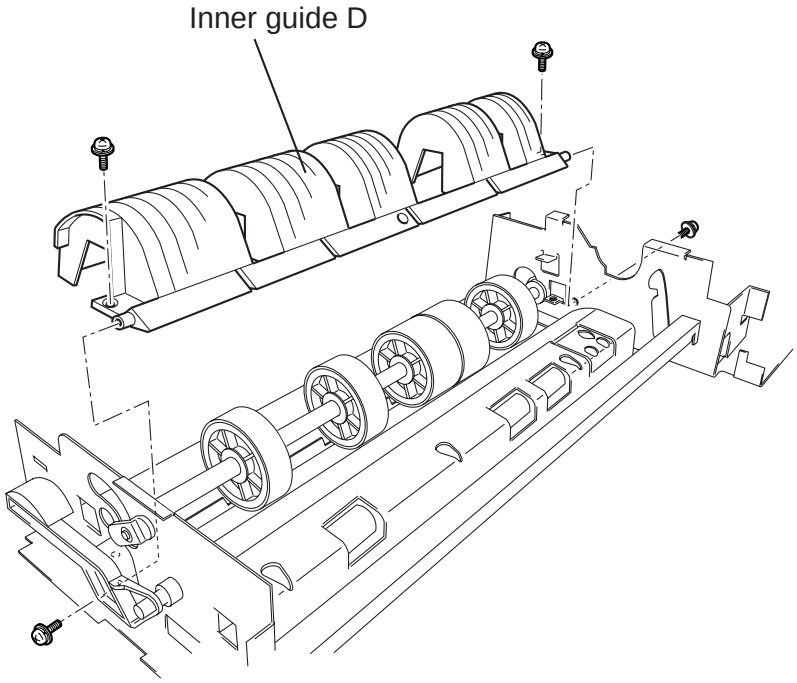
9. Remove four screws and hinge bracket A.



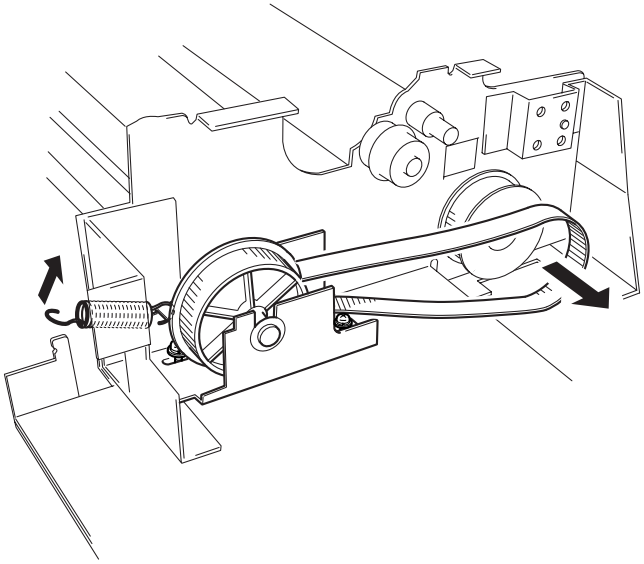
10. Remove four screws and hinge assembly L.



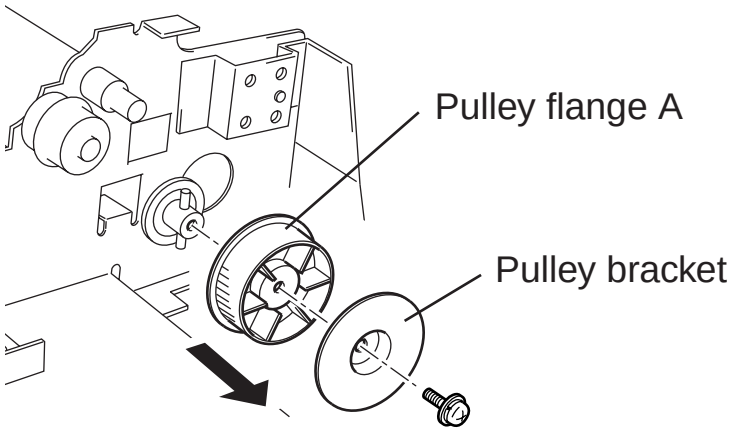
11. Remove four screws and inner guide D.



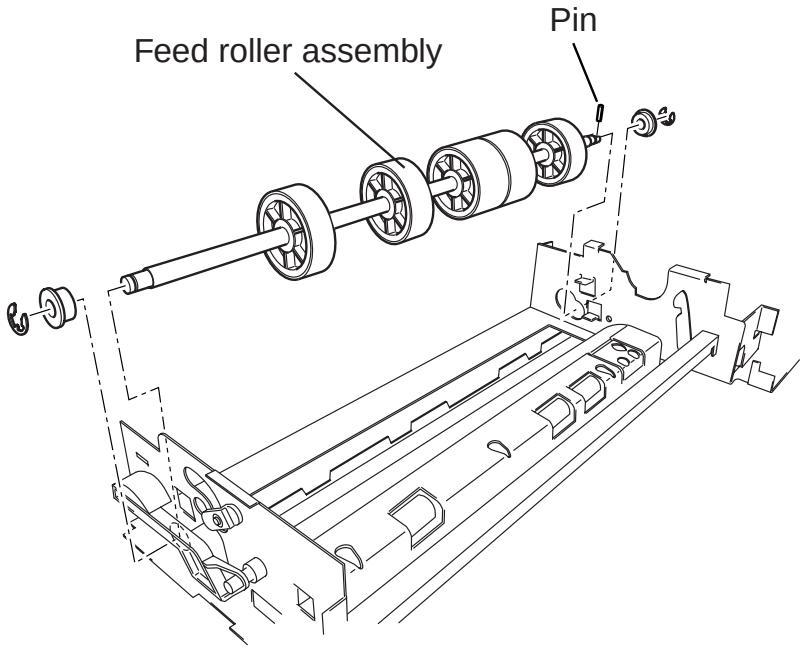
12. Remove one spring and loose two screws, then remove the belt.



13. Remove one screw and then remove the pulley flange A and Pulley bracket.

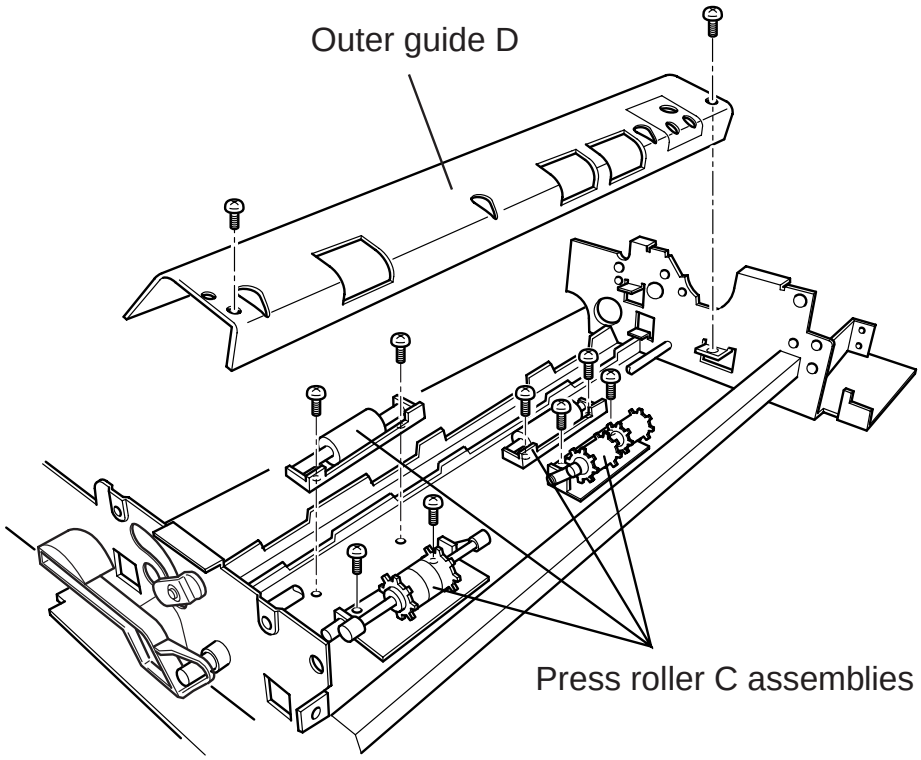


14. Remove two E-rings and one pin, then remove the Feed roller assembly.



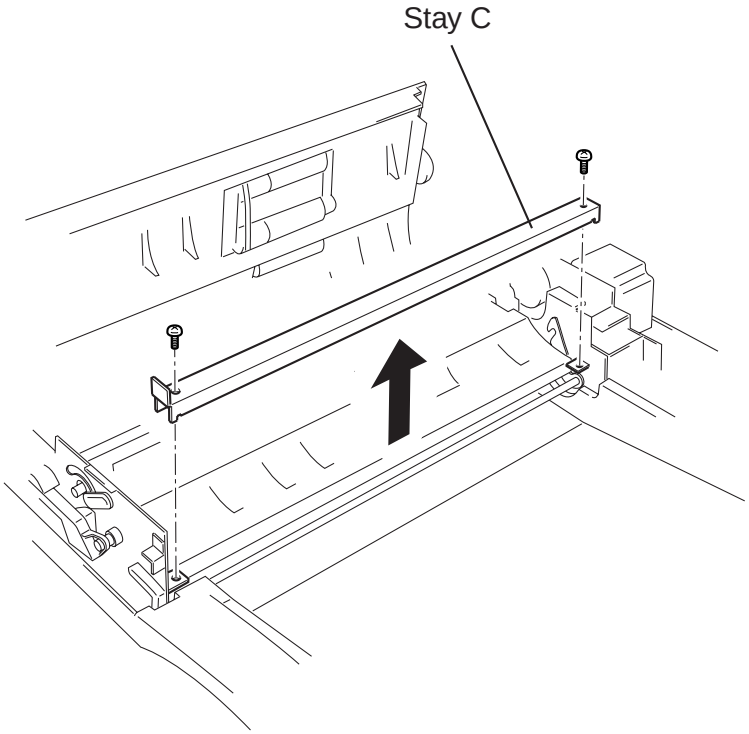
5.2.20 Press roller C

1. Remove the Inner guide C. (See step 11 of 5.2.19.)
2. Remove two screws and outer guide D.
3. Remove two screws of each Press roller assembly, then remove the Press roller assemblies.

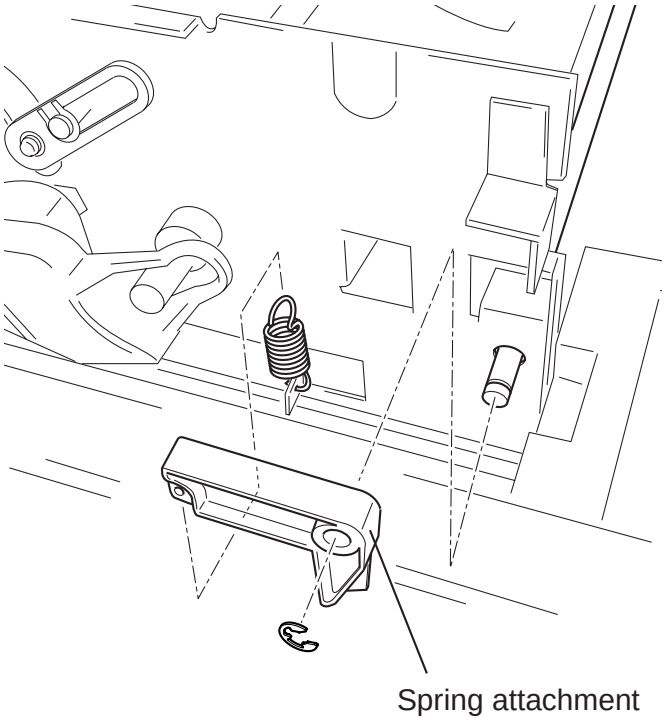


5.2.21 Lock lever assembly

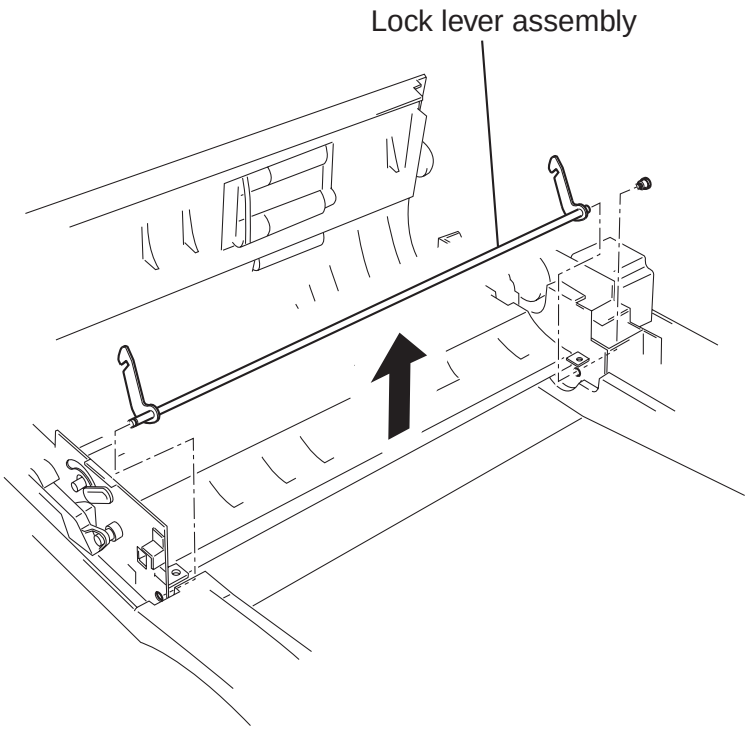
1. Remove the platen cover assembly. (See 5.2.17.)
2. Remove the Tx side cover. (See 5.2.10.)
3. Remove the document mount assembly (See 5.2.18.)
4. Remove two screws and Stay C.



5. Remove spring and E-ring, then remove the Spring attachment.

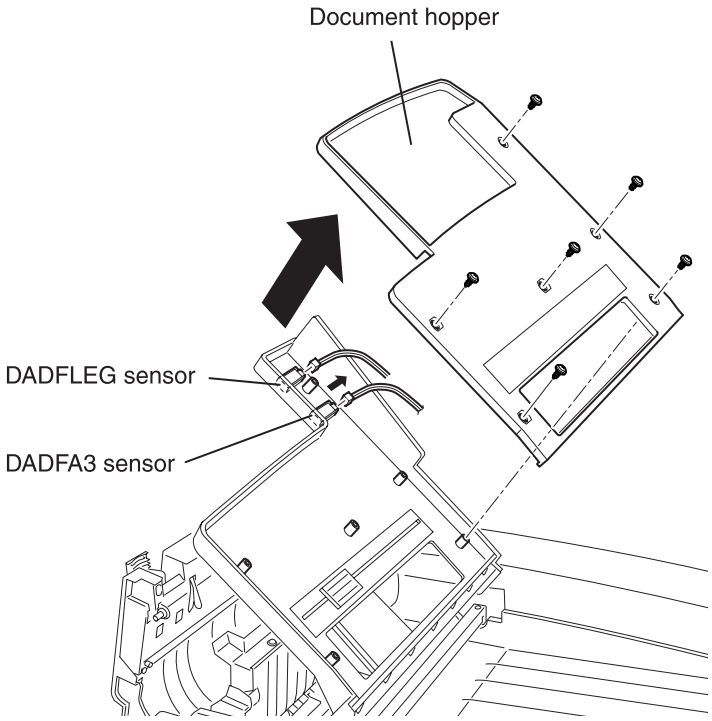


6. Use 6 mm adjustable spanner (adjustable wrench) or long nose cutting pliers to remove one screw and lock lever assembly.



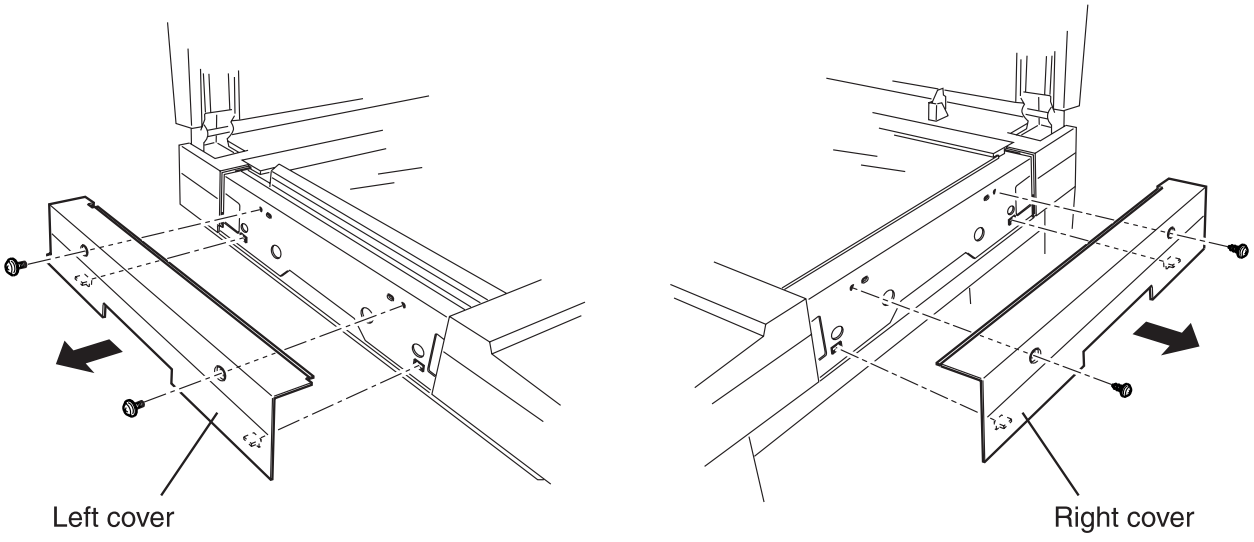
5.2.22 DADFA3, DADFLEG Sensor

1. Remove six screws and document hopper.
2. Disconnect the connector and then remove the DADFA3 and DADFLEG Sensor.



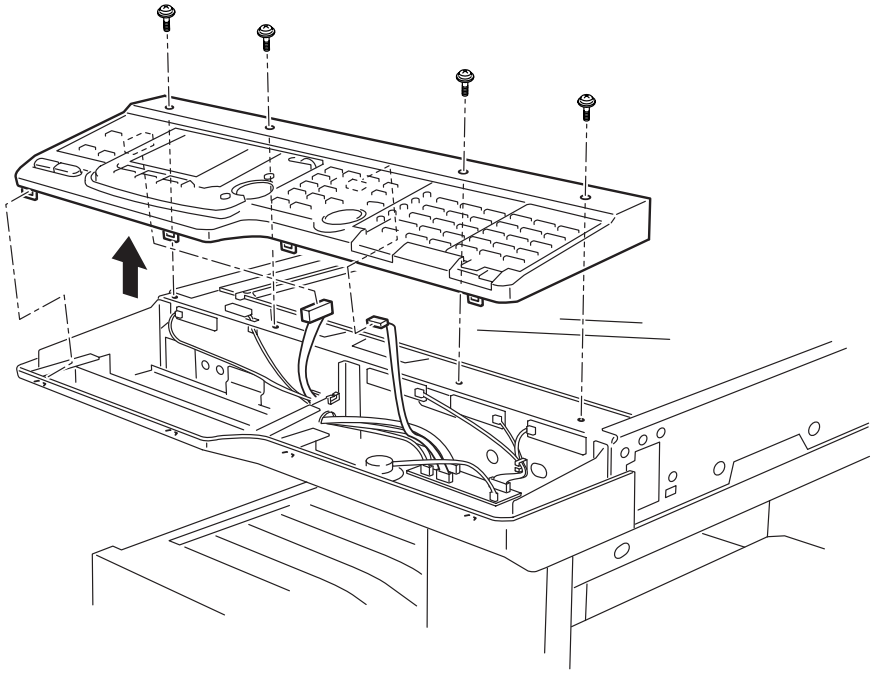
5.2.23 Right cover, Left cover

1. Open the platen cover.
2. Remove two screws of each covers, then remove the Right cover and Left cover.



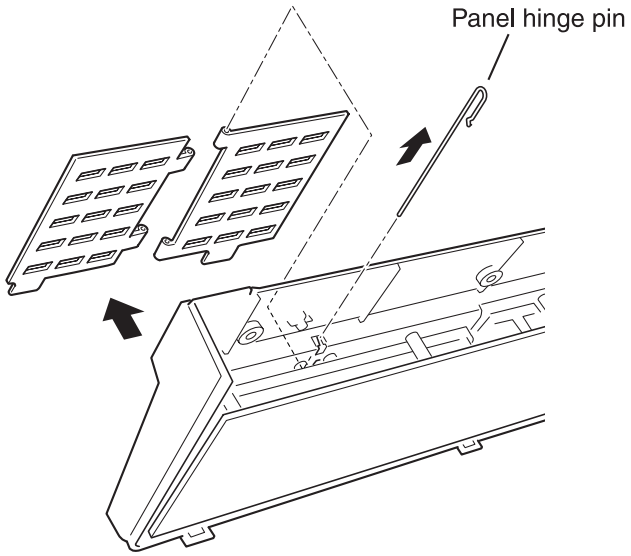
5.2.24 Panel assembly

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove four screws and disconnect three connectors, then remove the Panel assembly.



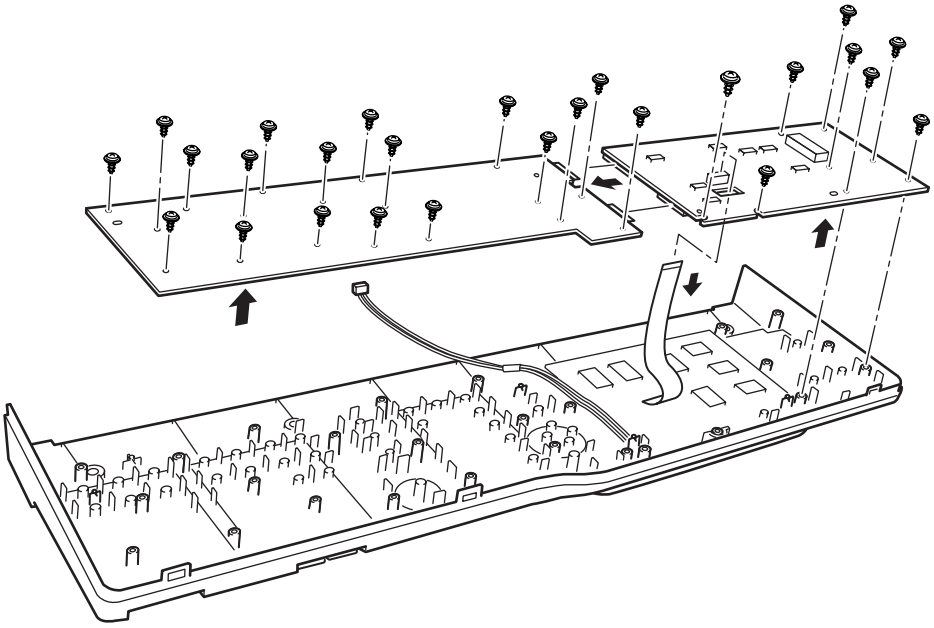
5.2.25 One-touch panel

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove the Panel hinge pin and One-touch panel.



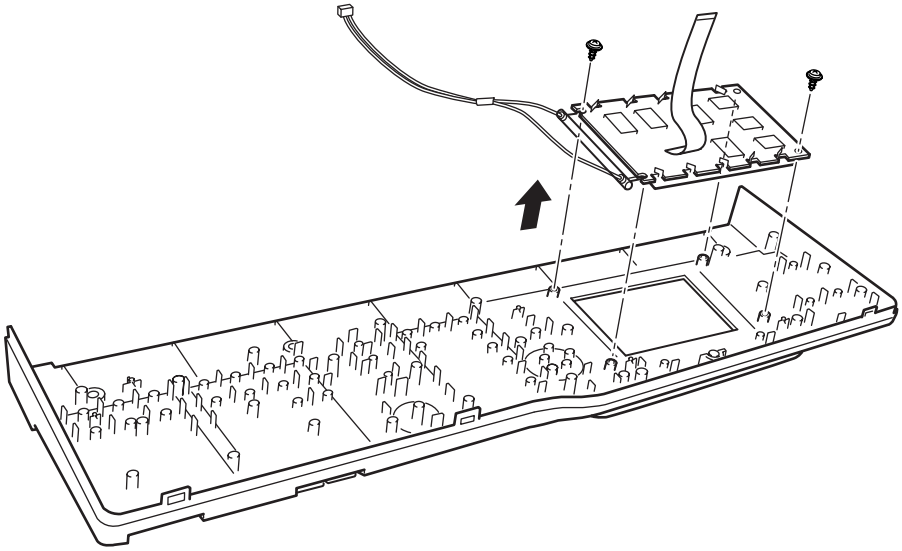
5.2.26 PCB Panel

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove the film harness and connector.
4. Remove the eight screws and 18 screws of the PCB Panel, then remove the PCB Panel.



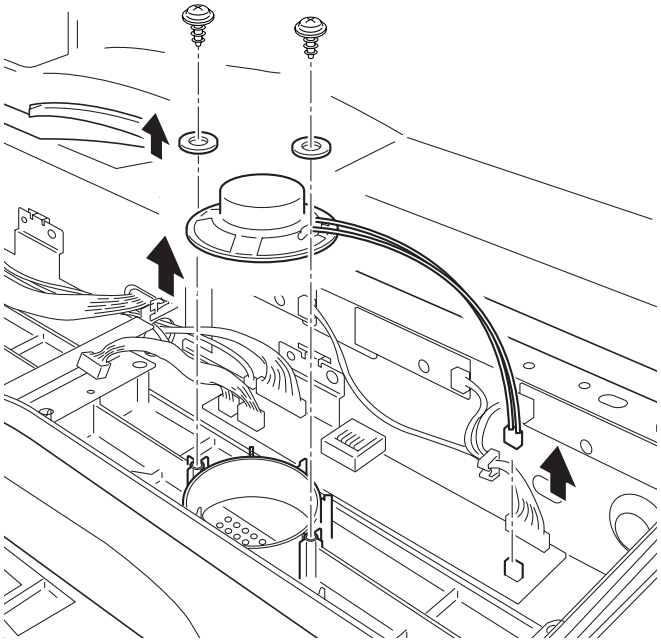
5.2.27 PCB Panel

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove PCB Panel. (See 5.2.26.)
4. Remove two screws and LCD.



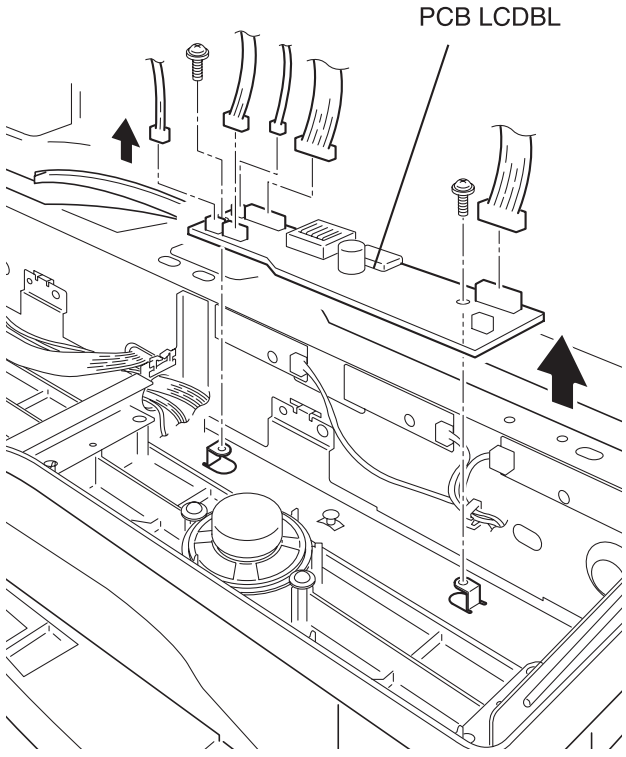
5.2.28 Speaker

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove one speaker connector and two mounting screws, and the remove the Speaker.



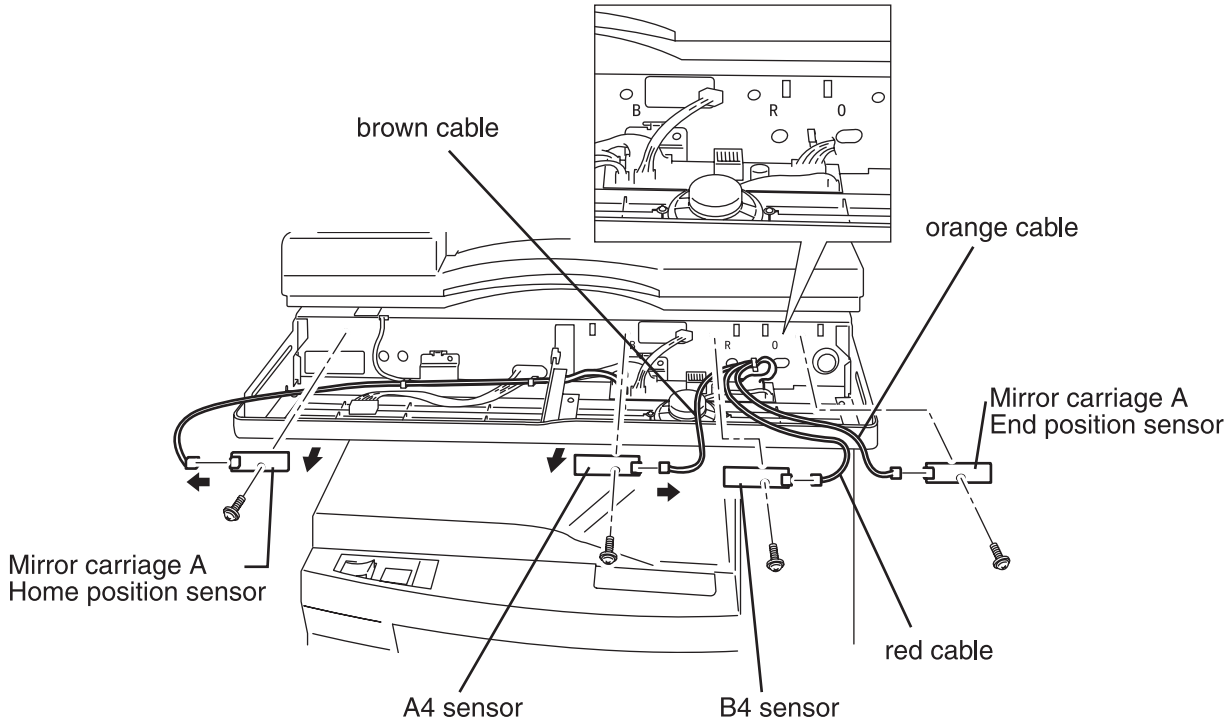
5.2.29 PCB LCDBL

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Disconnect all connectors and remove two screws. Then remove the PCB LCDBL.



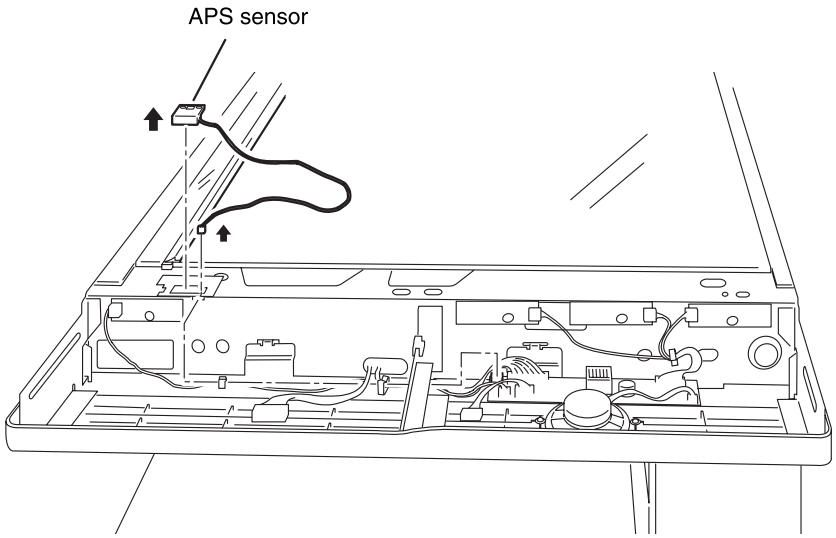
5.2.30 Mirror carriage Home sensor / A4 sensor / B4 sensor / Mirror carriage End sensor

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove one of each sensors and then remove sensor.



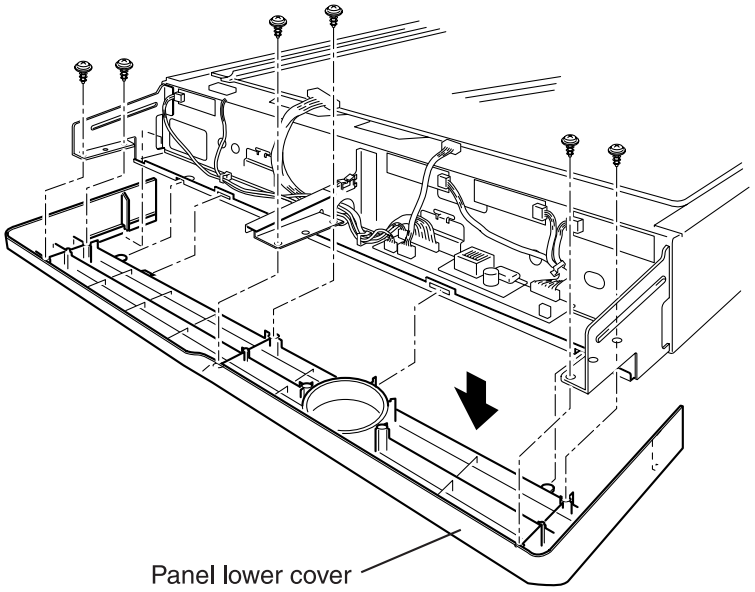
5.2.31 APS sensor

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Disconnect one connector and remove the APS sensor.



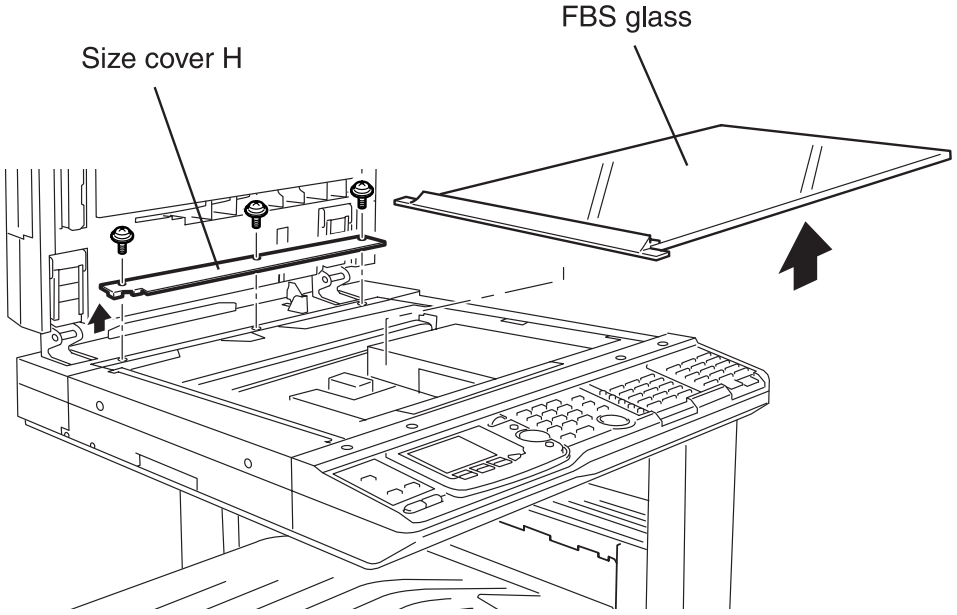
5.2.32 Panel lower cover

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Panel assembly. (See 5.2.24.)
3. Remove Speaker. (See 5.2.28)
4. Remove six screws and Panel lower cover.



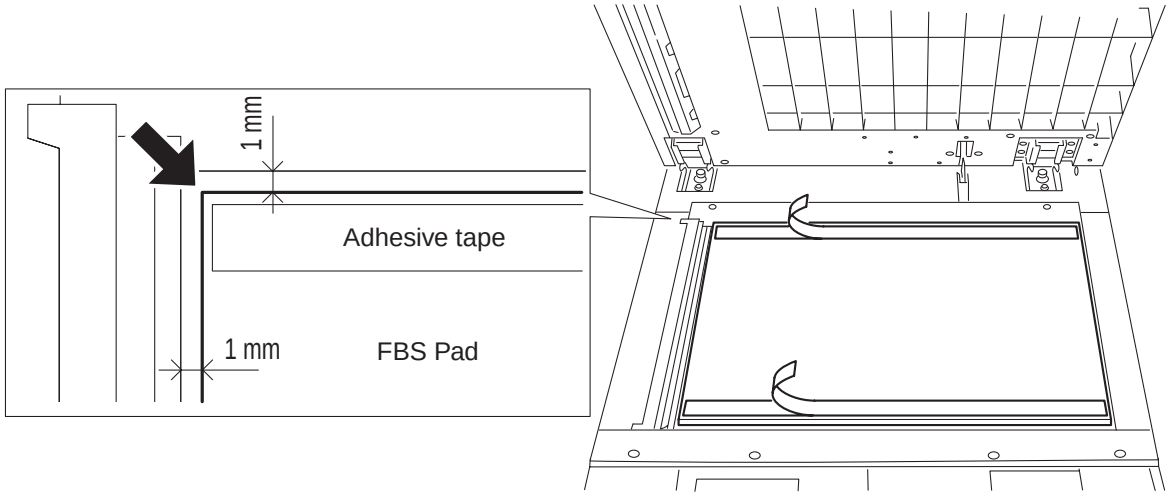
5.2.33 FBS glass

1. Remove the Right cover. (See 5.2.26.)
2. Remove three screws and Size cover H.
3. Remove FBS glass.



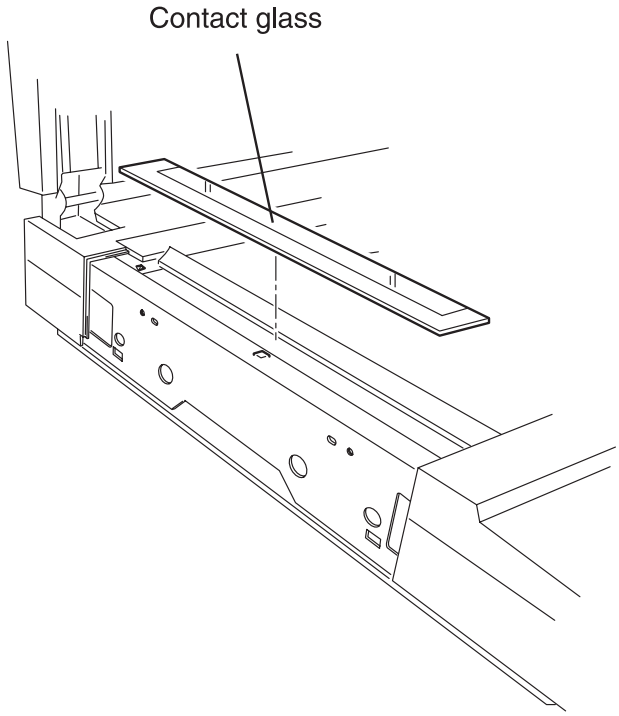
5.2.34 FBS Pad

1. Remove the old FBS pad.
2. Strip paper of adhesive tape.
3. Put on the new FBS pad (white face side down) on the FBS glass as shown.
4. Close the platen cover to attach the FBS pad.



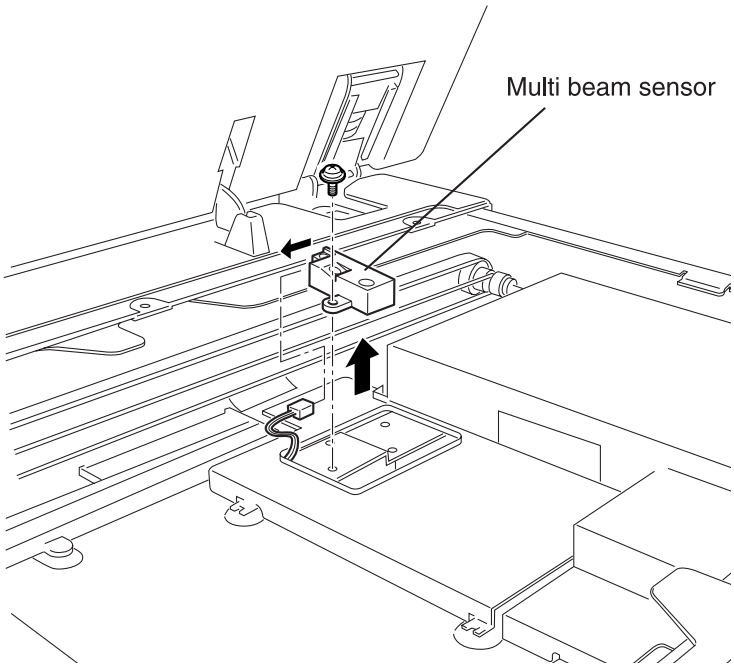
5.2.35 Contact glass

1. Remove the Left cover. (See 5.2.26.)
2. Remove Contact glass.



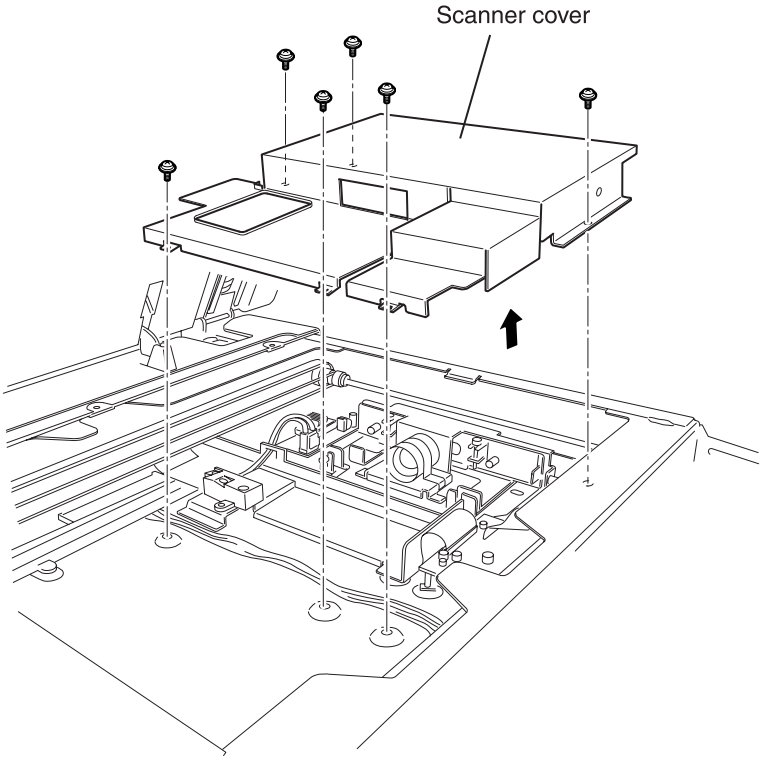
5.2.36 Multi beam sensor

1. Remove the Right cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove one screw and one connector. The remove the multi beam sensor.

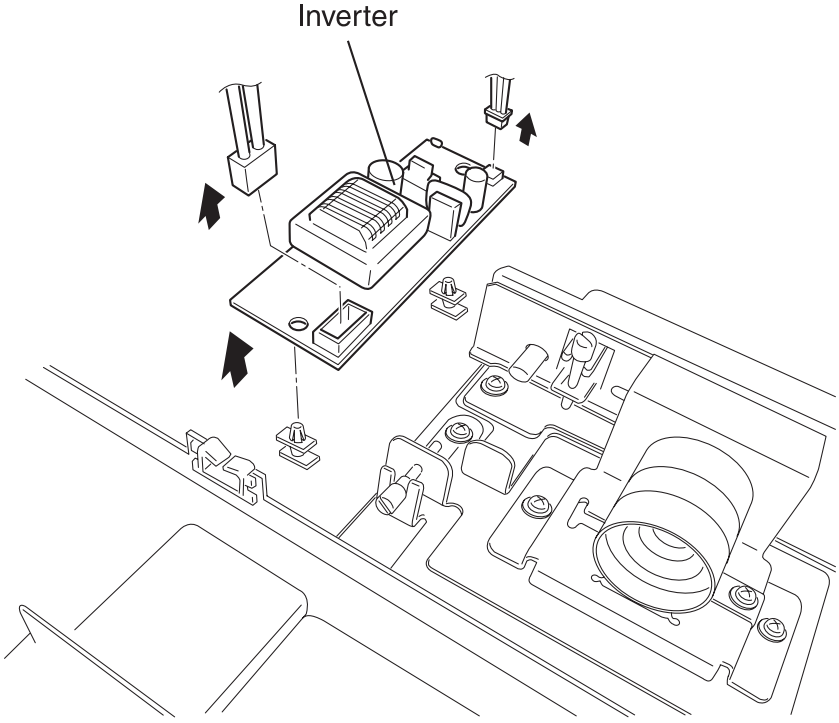


5.2.37 Inverter

1. Remove the Right cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove six screws and Scanner cover.

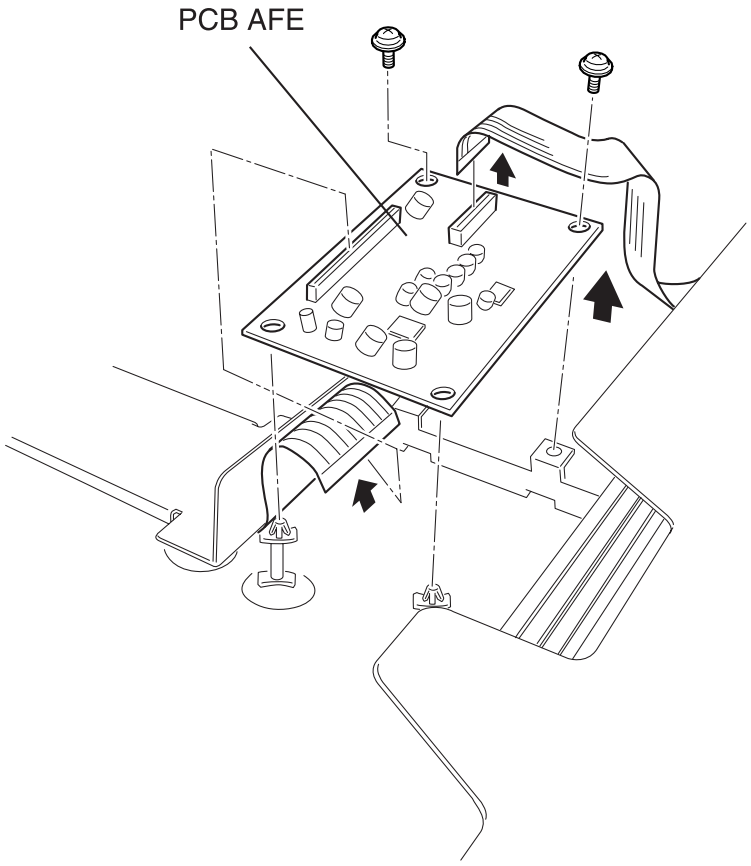


5. Disconnect two connectors and tabs, then remove the Inverter.



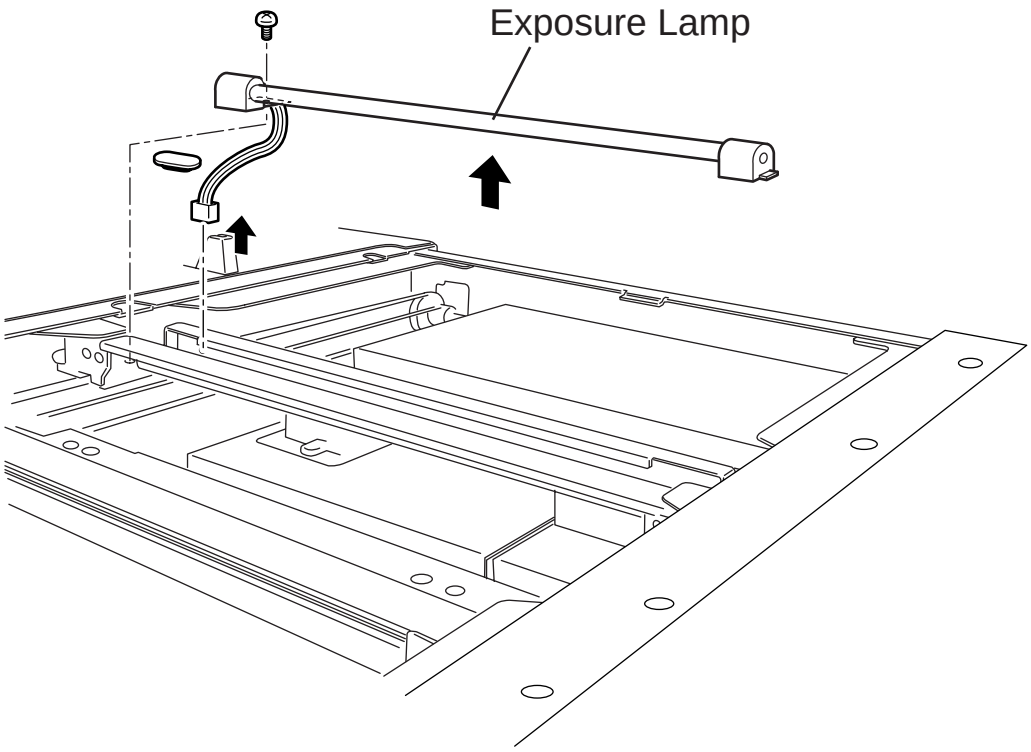
5.2.38 PCB AFE

1. Remove the Right cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove six screws and Scanner cover. (See 5.2.37.)
5. Disconnect two film harness and two tabs, remove two screws. Then remove the PCB AFE.



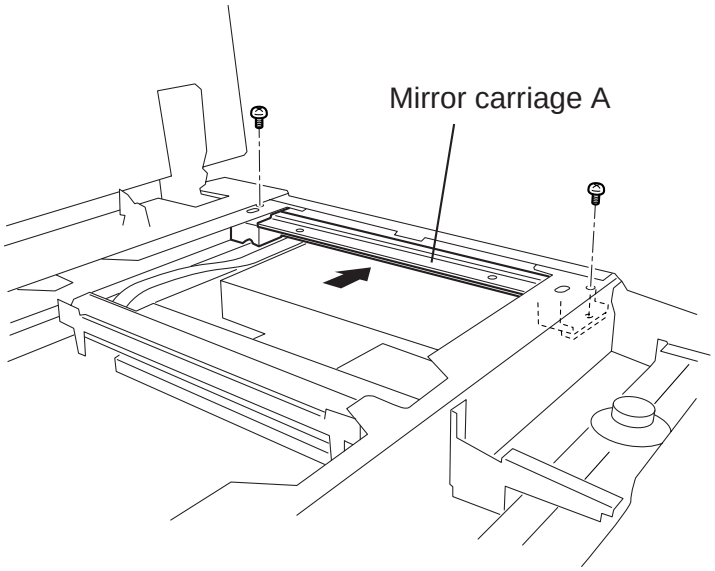
5.2.39 Exposure lamp

1. Remove the Right and left cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove Panel assembly. (See 5.2.24.)
5. Remove the blind sheet and then remove a screw on the exposure lamp bracket.
6. Remove the connector cover, then disconnect the connector.
7. Remove the exposure lamp.

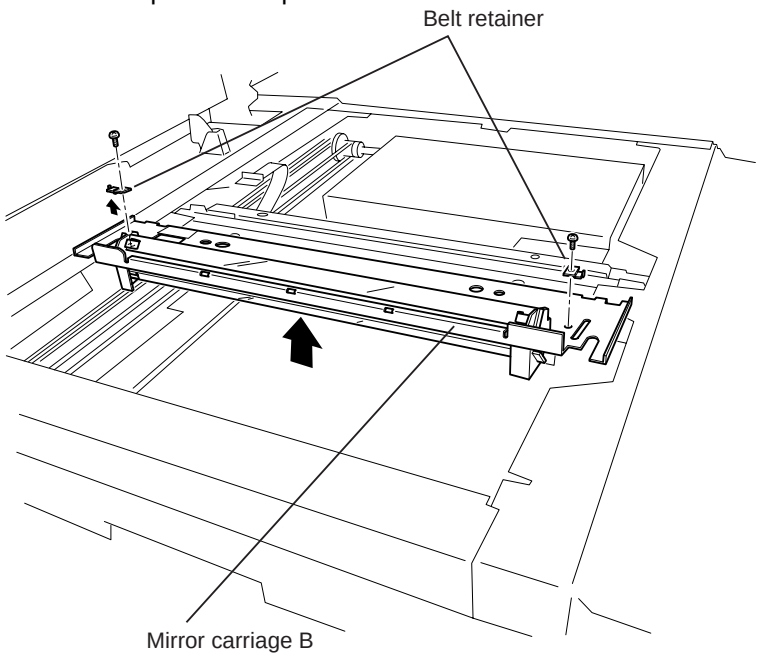


5.2.40 Mirror carriage A assembly

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove Panel assembly. (See 5.2.24.)
5. Move the Mirror carriage A to right end. Then remove the screws from the belt retainer.



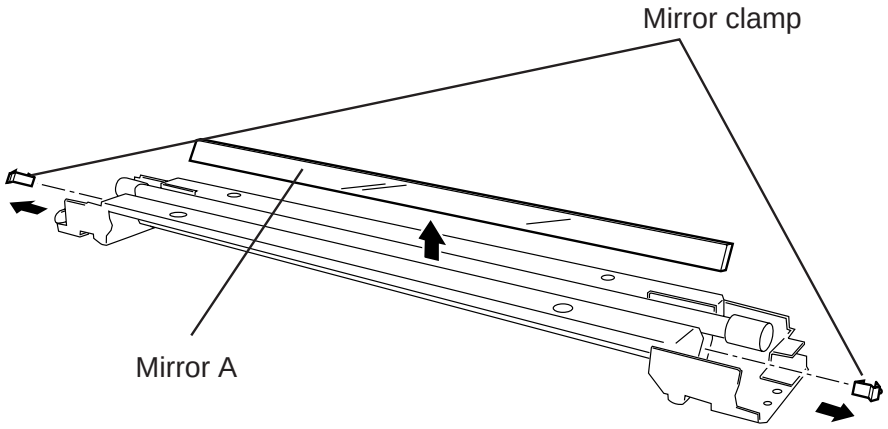
6. Remove the blind sheet.
7. Move the Mirror carriage A assembly to the center. Then remove the belt retainers.
8. Remove one screw and FPC bracket.
9. Disconnect the connector of exposure lamp.



10. Remove the Mirror carriage A assembly.

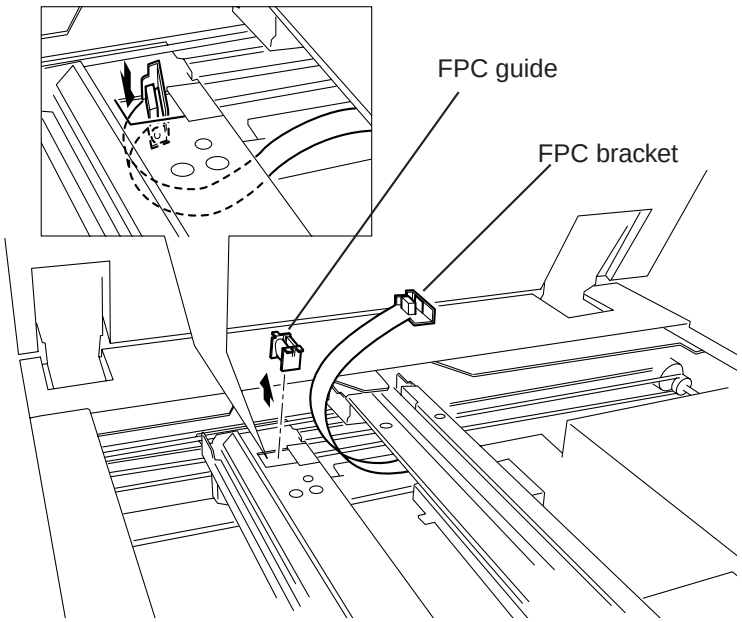
5.2.41 Mirror A

1. Remove the Right and Left cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove Panel assembly. (See 5.2.24.)
5. Remove the Mirror carriage A assembly. (See 5.2.40.)
6. Remove the mirror clamp and Mirror A.

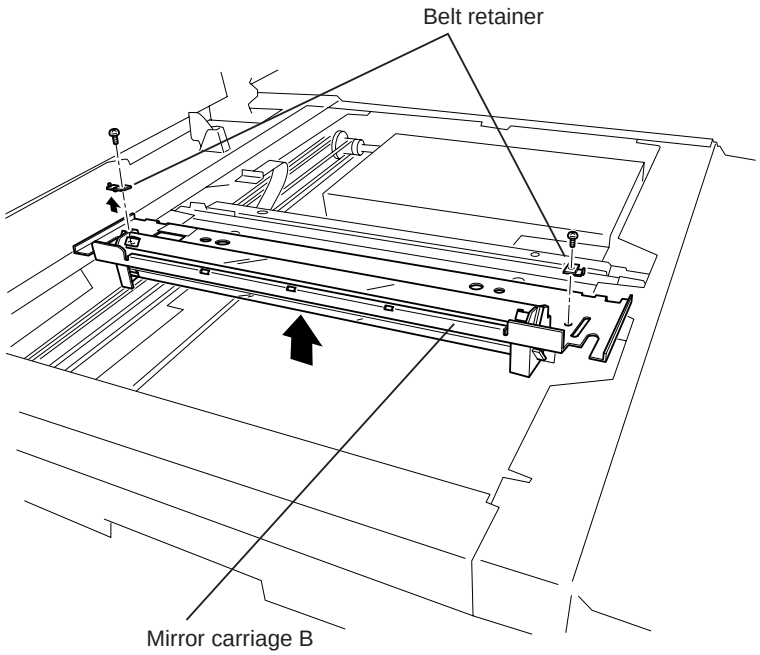


5.2.42 Mirror carriage B assembly

1. Remove the Right cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove FBS glass. (See 5.2.33.)
4. Remove FPC bracket. (See step 8 of 5.2.40.)
5. Disconnect the connector of exposure lamp.
6. Remove the FPC guide.
7. Through the FPC bracket to the hole of mirror carriage B.

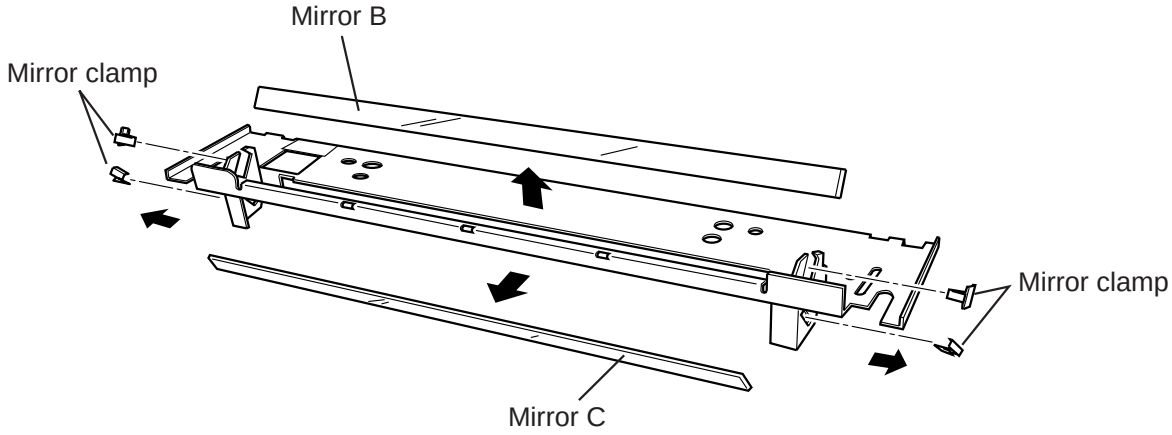


8. Remove the screws of belt retainers.
7. Remove the Mirror carriage B assembly.



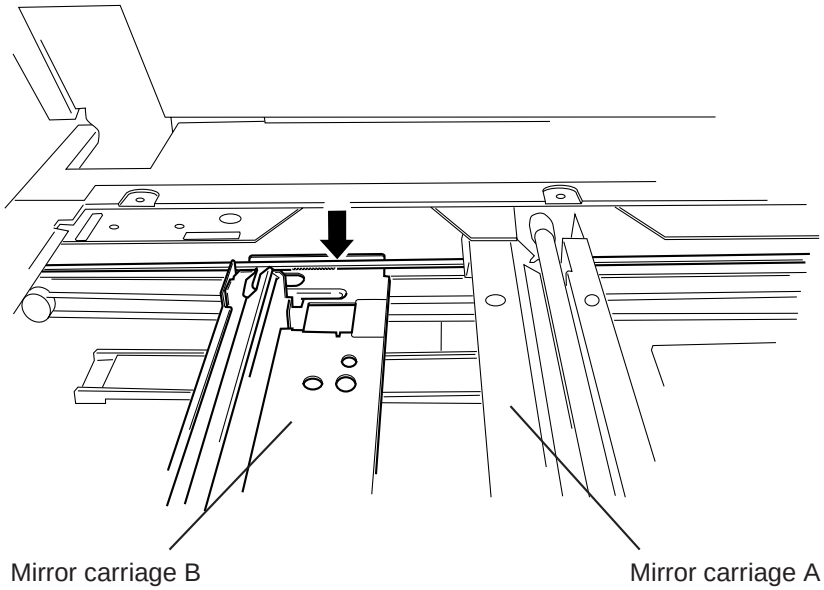
5.2.43 Mirror B and C

1. Remove the Right cover. (See 5.2.26.)
2. Remove Size cover H. (See 5.2.33.)
3. Remove the FBS glass. (See 5.2.33.)
4. Remove Mirror carriage B assembly. (See 5.2.42.)
5. Remove the mirror clamp, and then remove the Mirror B and C.

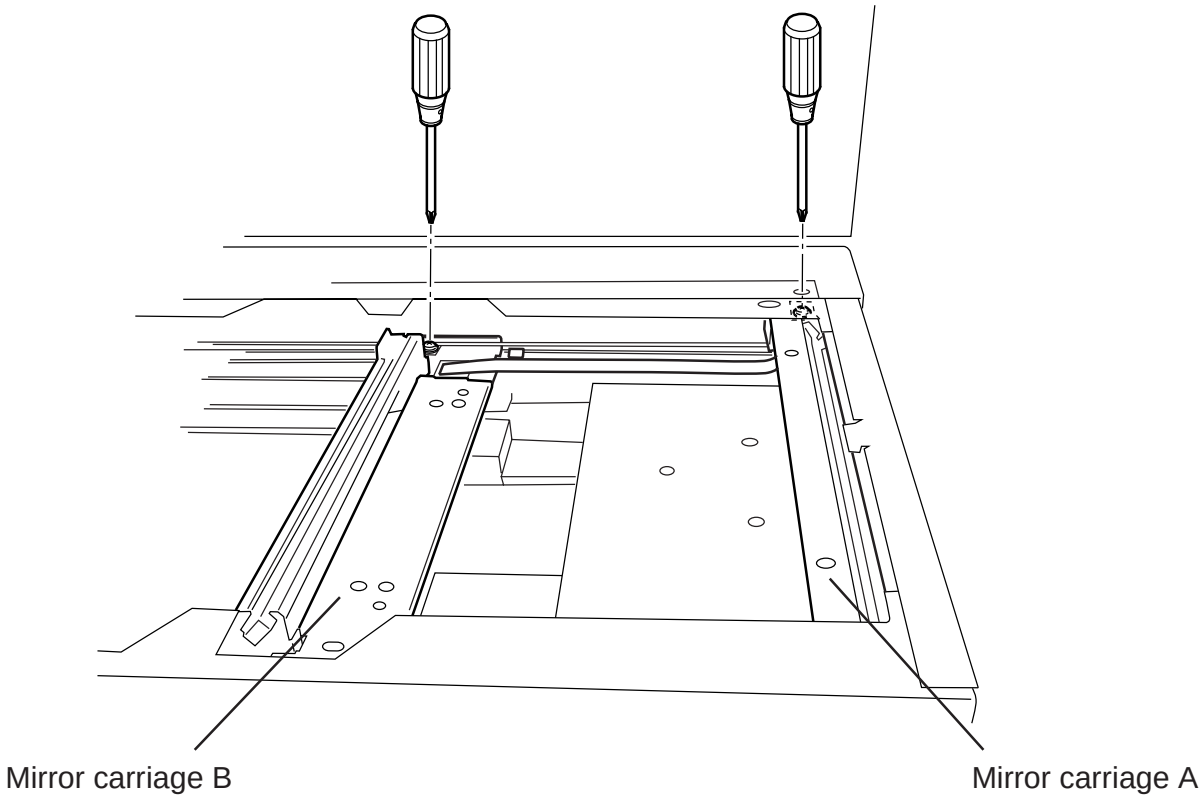


5.2.44 Reassemble the Mirror carriage A and B

1. Put on the Mirror carriage A and B.



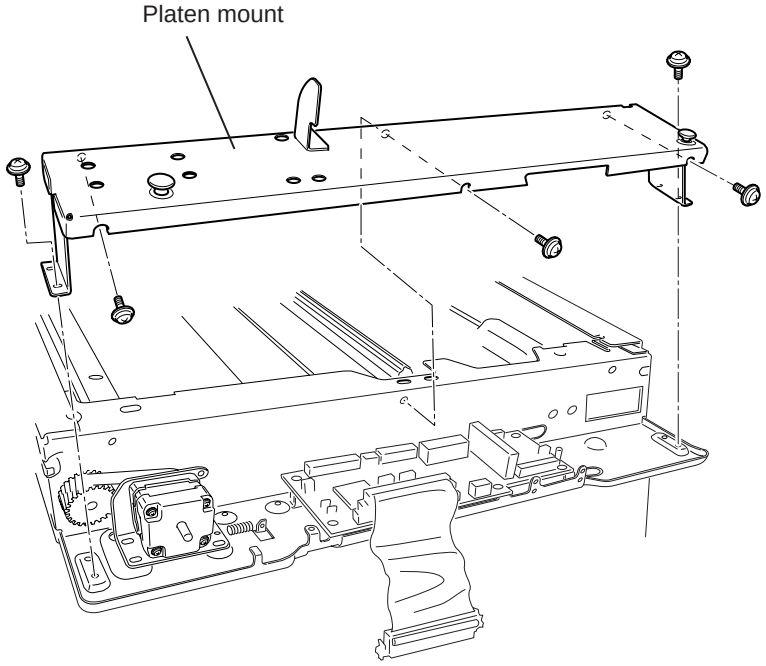
2. Temporarily attach the belt retainer with screw loosely.
3. Move the Mirror carriage A and B to the right end until they stop.
4. Tighten the screws of the retainer to secure the Mirror cartridge A and B.



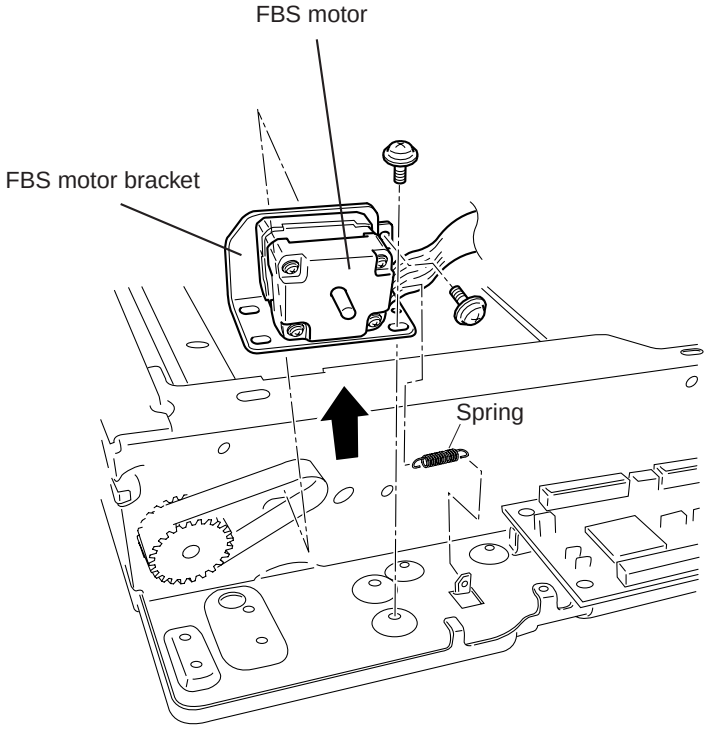
Note: Whenever the Mirror carriage A and B has been removed, make the image deformation adjustment. (See page 5-91.)

5.2.45 FBS motor

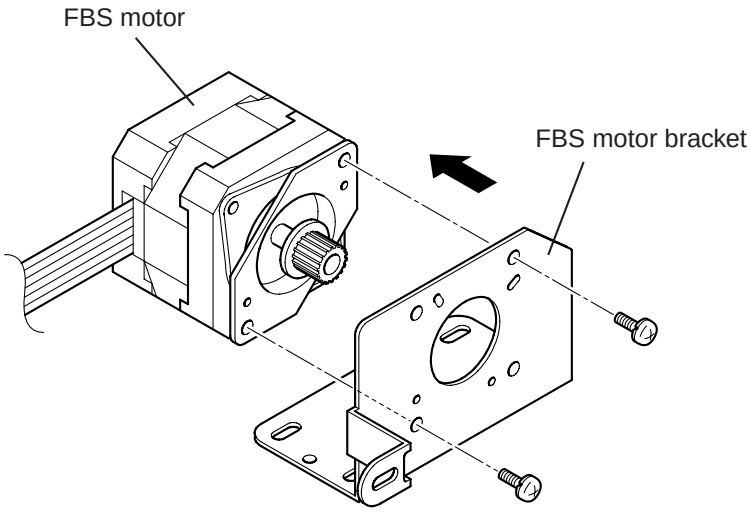
1. Remove the platen cover assembly. (See 5.2.17)
2. Remove the Size cover H. (See 5.2.33.)
3. Remove rear top cover.
4. Remove five screws and platen mount.



5. Disconnect the connector P13 on the PCB Scanner.
6. Remove one spring and three screw, then remove FBS motor bracket.



7. Remove two screws and FBS motor.

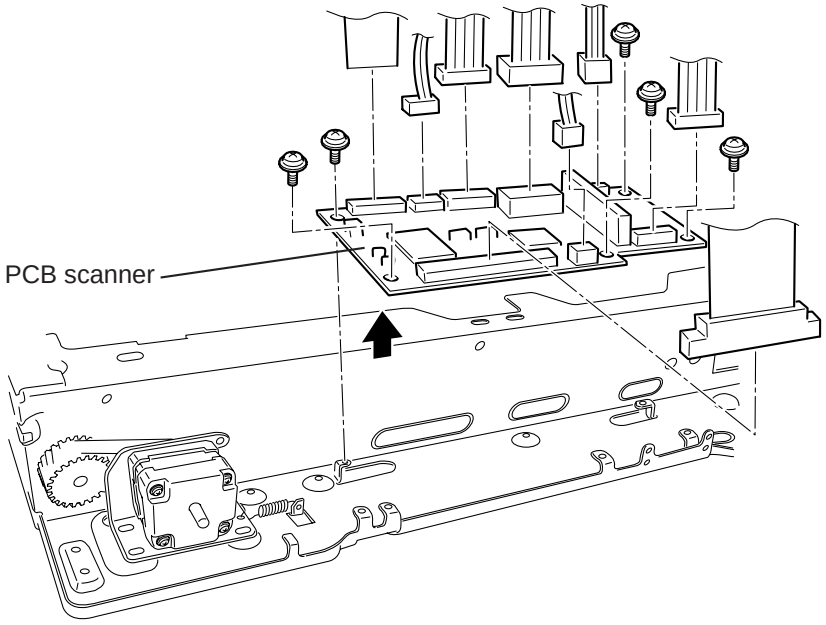


Note: When reassemble the FBS motor, follow the instructions below:

1. Attach the FBS to the FBS bracket.
2. Attach the FBS motor bracket loosely.
3. Attach the spring and belt.
4. Secure the screws you attached loosely in step 2.

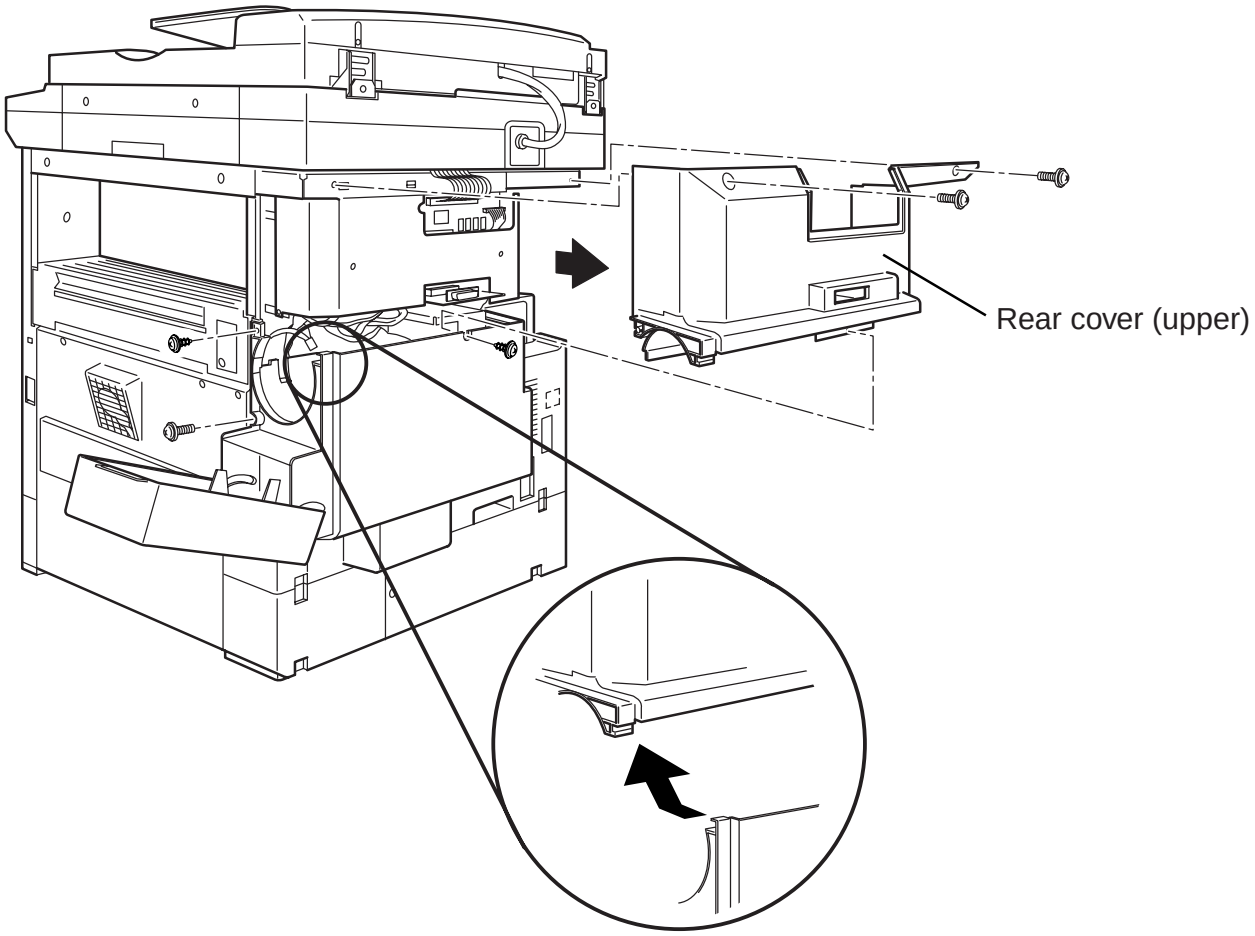
5.2.46 PCB Scanner

1. Remove the platen cover assembly. (See 5.2.17)
2. Remove the Size cover H. (See 5.2.33)
3. Remove the platen mount.
4. Remove five screws and all connectors, then remove the PCB Scanner.



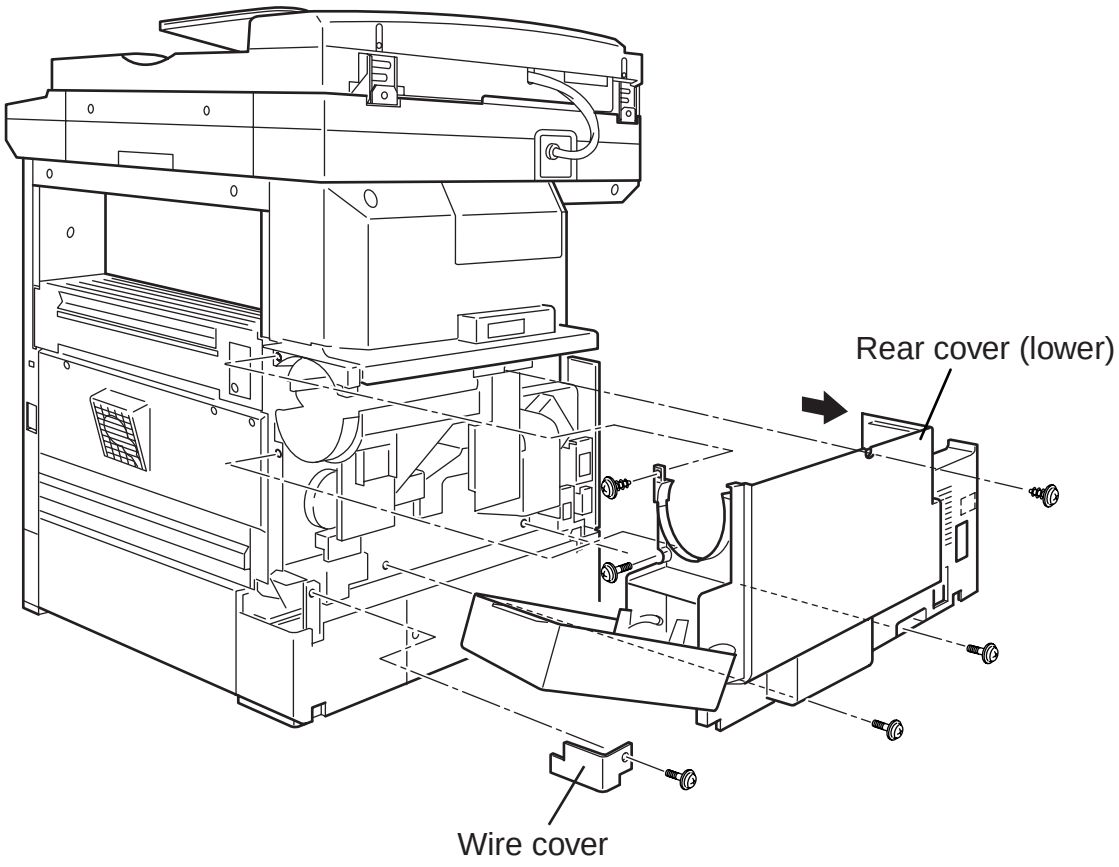
5.2.47 Rear cover (upper)

1. Remove four Rear cover (upper) mounting screws and one Rear cover (lower) mounting screw as shown.
2. Remove the Rear cover (upper).



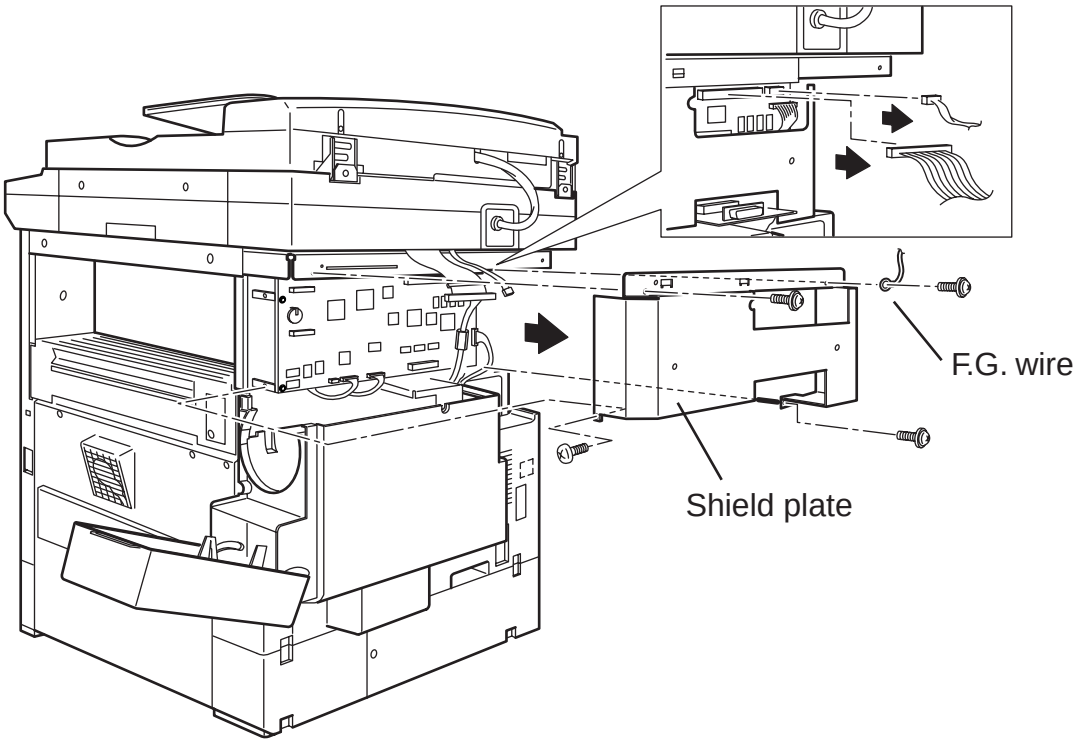
5.2.48 Rear cover (lower)

1. Remove the one screw and wire cover.
2. Remove five Rear cover (lower) mounting screws.
2. Remove the Rear cover (lower).



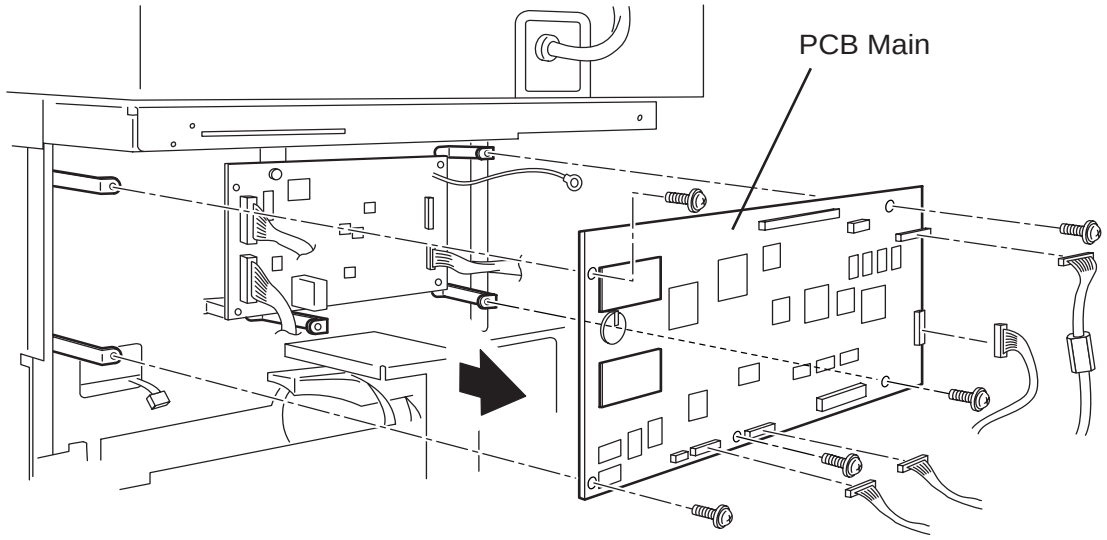
5.2.49 Shield plate

1. Remove the Rear cover (upper). (See 5.2.47)
2. Disconnect the two cables from scanner unit as shown.
3. Remove the four screws and shield plate.
   Note: When reassemble the shield plate, do not forget attaching the F.G. wire.



5.2.50 PCB Main

1. Remove the rear cover (upper). (See 5.2.47.)
2. Remove the shield plate. (See 5.2.49.)
3. Disconnect the all connectors on the PCB Main and remove the five screws, then remove the PCB Main.

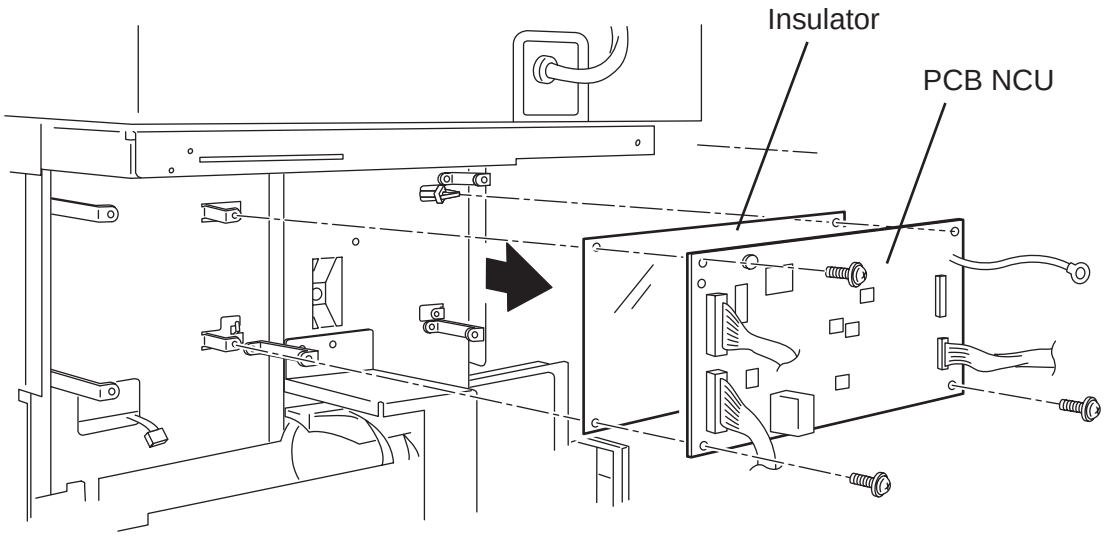


Note: Before replace the Main board, it is advisable to print the machine settings, fax settings, copy settings, one-touch and speed dial listings to help in reprogramming these information.

Note: Jumper JP2 on the main control PCB is used for battery back-up of the DRAM. Any documents stored in DRAM. Removing JP1 will initialize the DRAM.
Jumper JP1 on the main control PCB is used for battery back-up of the SRAM. All user programmed data and internal machine parameter, memory switch and unique switch settings are held in SRAM. Removing JP2 will initialize the SRAM.
Confirm the each Jumper is ON.

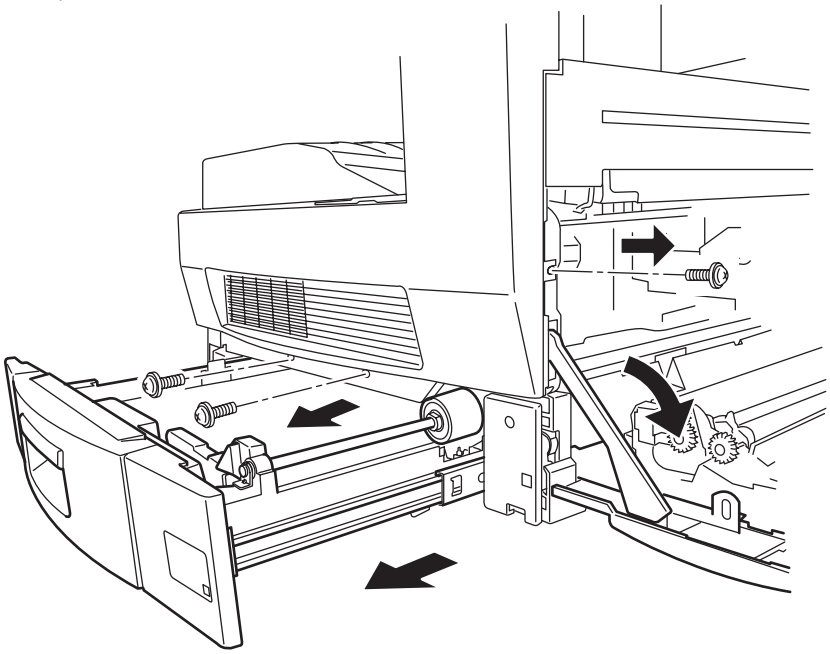
5.2.51 PCB NCU

1. Remove the rear cover (upper). (See 5.2.47.)
2. Remove the shield plate. (See 5.2.49.)
3. Remove the PCB Main. (See 5.2.50)
4. Disconnect the all connectors and remove three screws and one tab, then remove the PCB NCU.

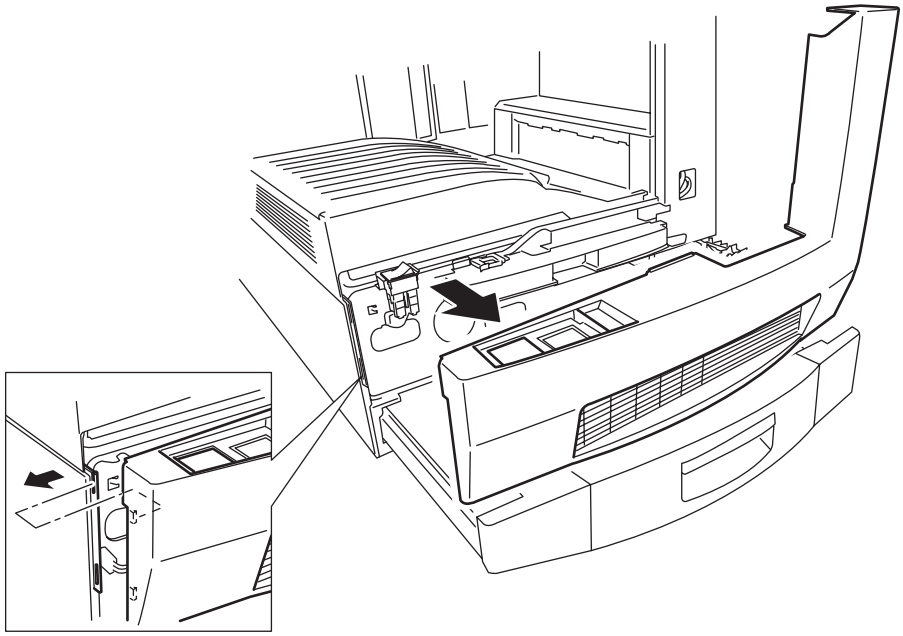


5.2.52 Front cover

1. Slide out the multi paper cassette (1st cassette), and then remove the two front cover mounting screws.
2. Open the side cover, then remove the screw.

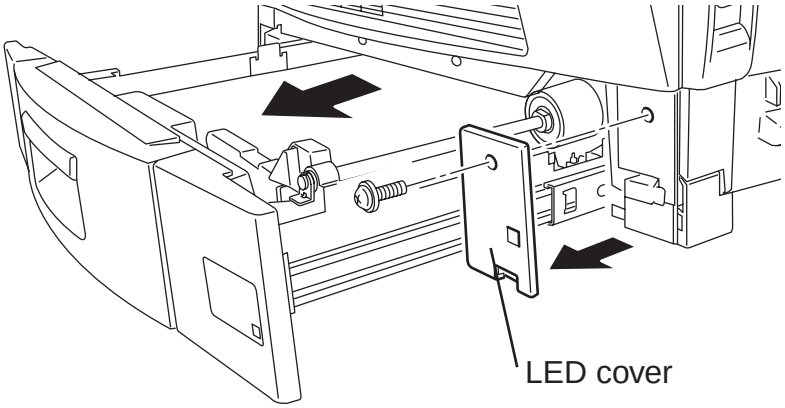


3. Remove two tabs, then remove front cover.



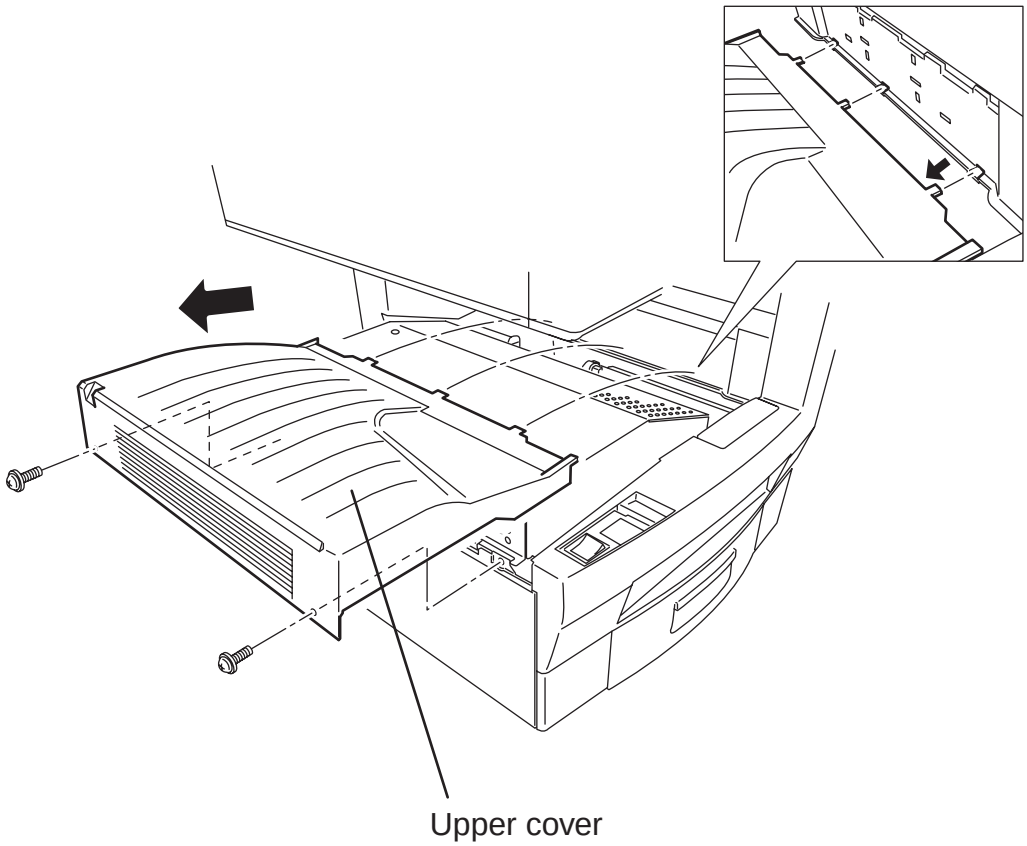
5.2.53 LED cover

1. Slide out the multi paper cassette (1st cassette).
2. Remove one screw and LED cover.



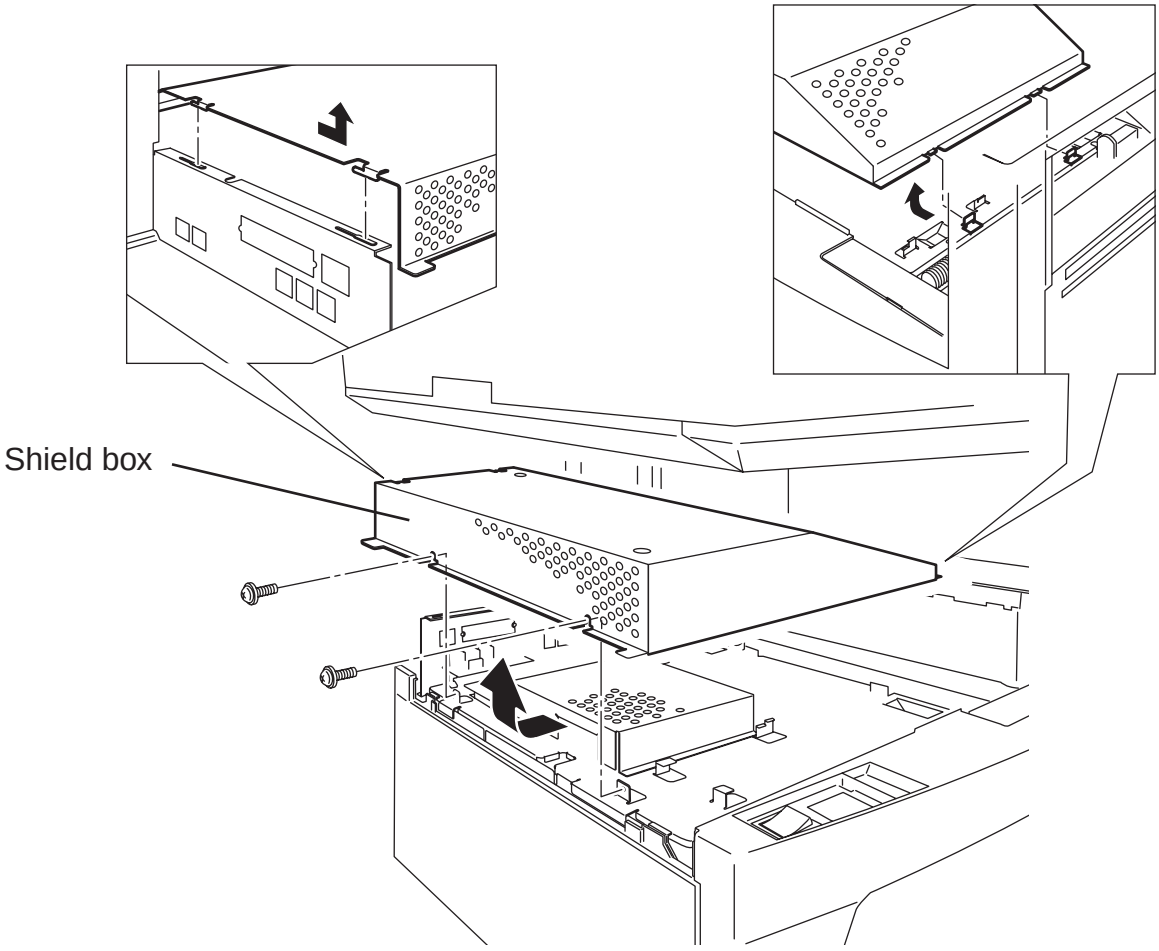
5.2.54 Upper cover

1. Remove two screws and upper cover.



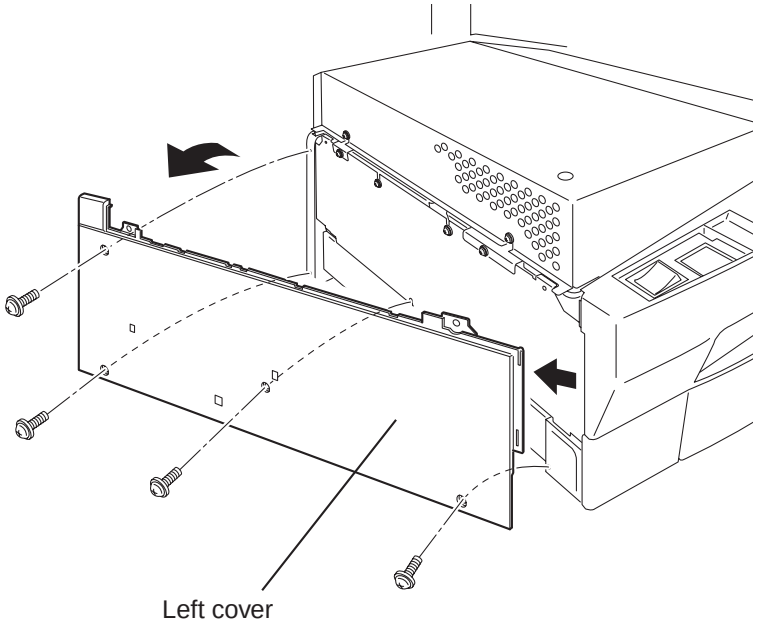
5.2.55 Shield box

1. Remove the upper cover. (See 5.2.54.)
2. Remove two screws and slide out the shield cover.



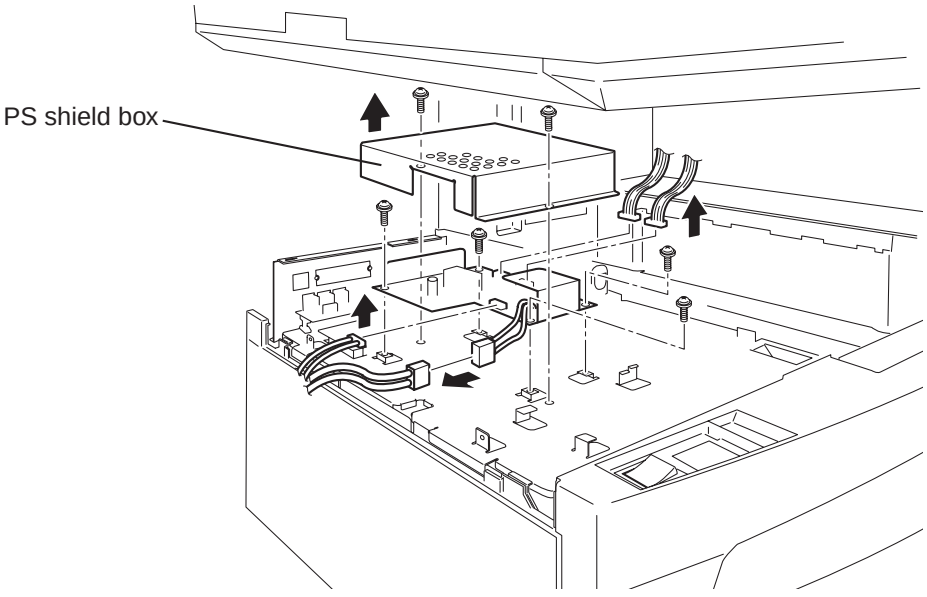
5.2.56 Left cover

1. Remove the upper cover. (See 5.2.54.)
2. Remove four screws and left cover.



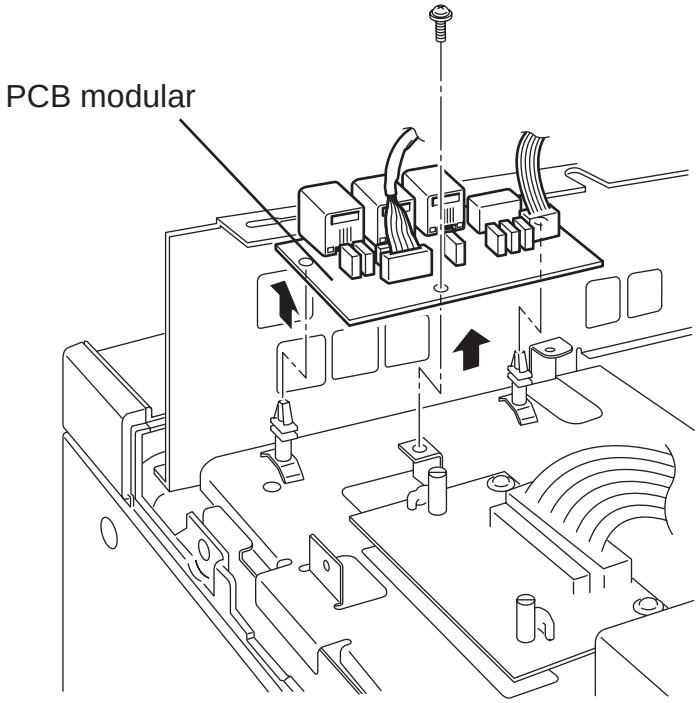
5.2.57 PU1

1. Remove the upper cover. (See 5.2.54.)
2. Remove the shield box. (See 5.2.55.)
3. Remove two screws and PS shield box.
4. Remove four screws and disconnect the all connectors. Then remove the PU1



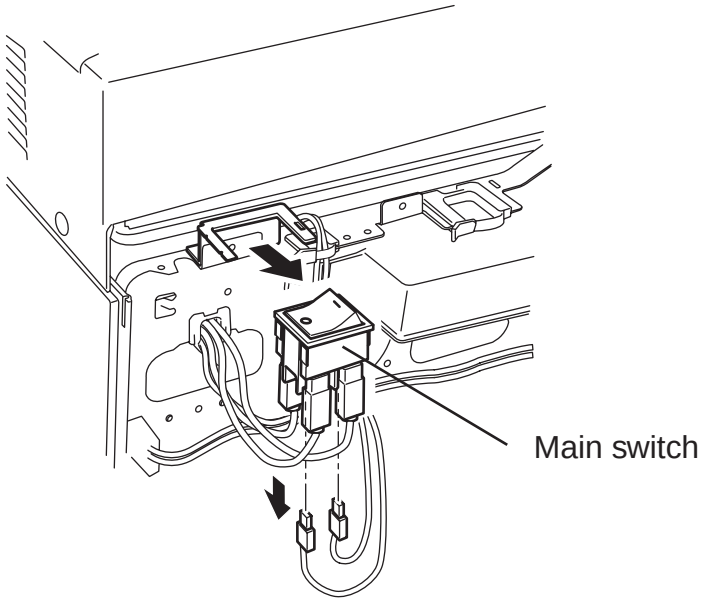
5.2.58 PCB Modular

1. Remove the upper cover. (See 5.2.54.)
2. Remove the shield box. (See 5.2.55.)
3. Disconnect the all connectors, remove one screw and two tabs. Then remove the PCB Modular.



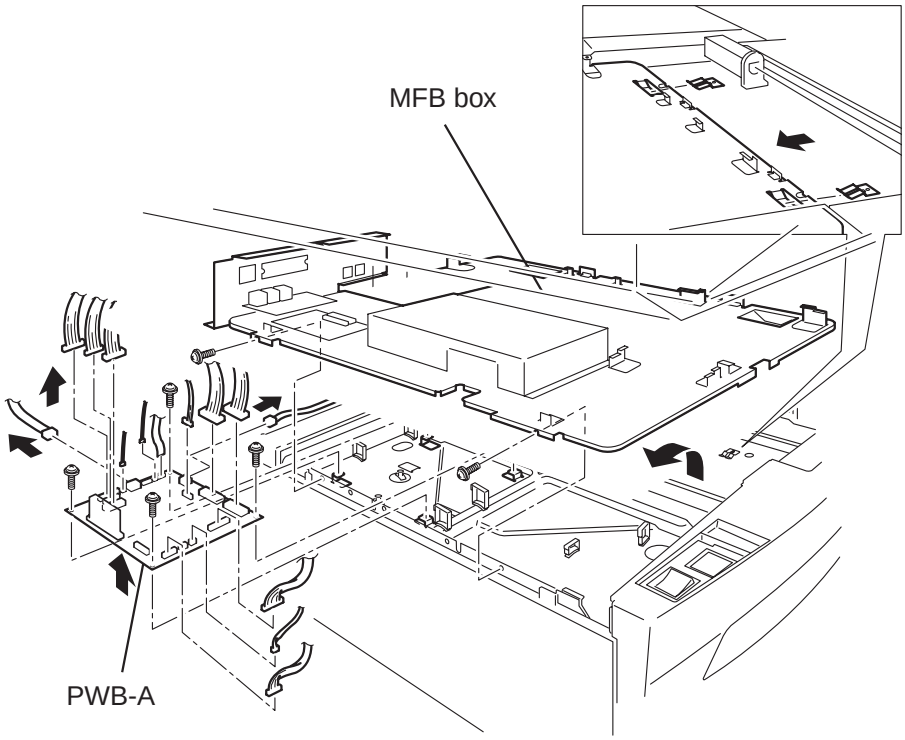
5.2.59 Main switch

1. Remove the front cover. (See 5.2.52.)
2. Disconnect the connector and remove the main switch.



5.2.60 Master board (PWB-A)

1. Remove the upper cover. (See 5.2.54.)
2. Remove the shield box. (See 5.2.55.)
3. Remove the two screws and MFB box.
4. Disconnect the all connectors and remove four screws, then remove the master board.

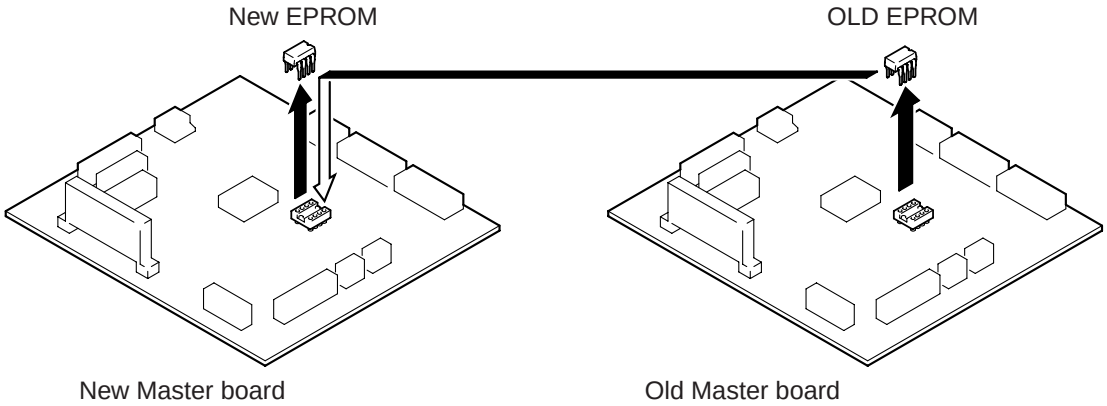


Remounting The EEPROM (IC3A)

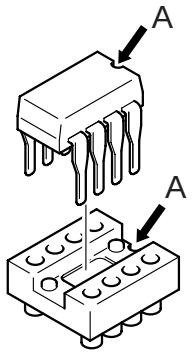
Notes:

- If the Imaging Cartridge is not to be replaced after the Master Board has been replaced with a new one, be sure to remount the EEPROM (IC3A) from the old to new Master Board.
- If the Master Board has been replaced with a new one and the EEPROM (IC3A) has not been remounted, be sure to replace the Imaging Cartridge with a new one. Because the EEPROM contains no data in this case, make settings and readjustments as necessary.

1. Remove the Master Board (PWB-A).
2. Demount the EEPROM (IC3A) from the new Master Board.
3. Demount the EEPROM (IC3A) from the old Master Board and remount it onto the new

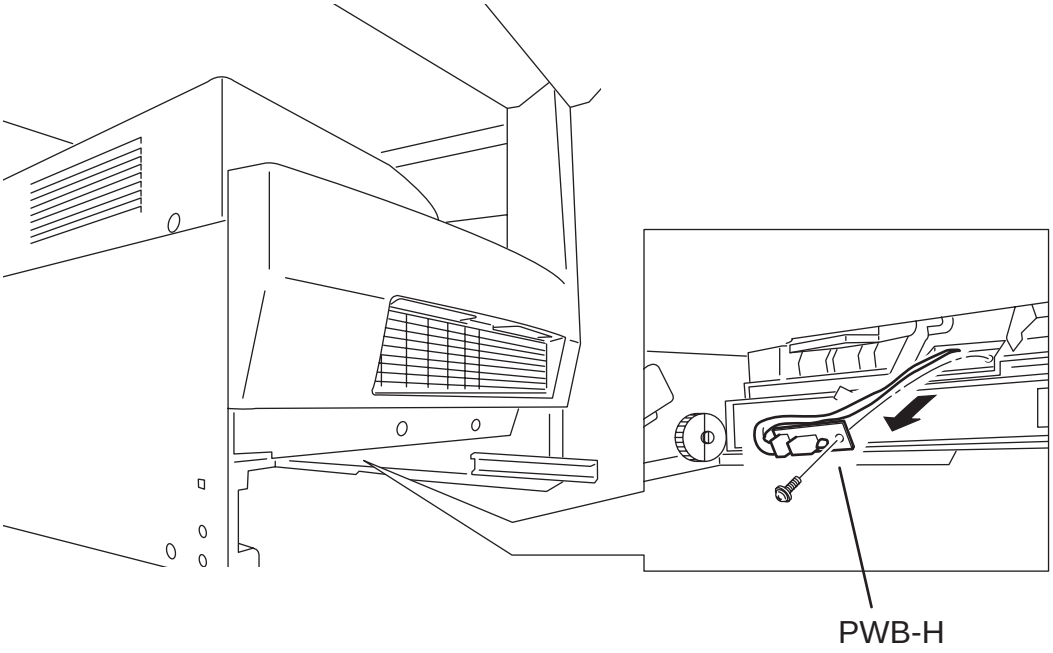


Note: Note the alignment notch on the EEPROM (IC3A) when mounting the IC.



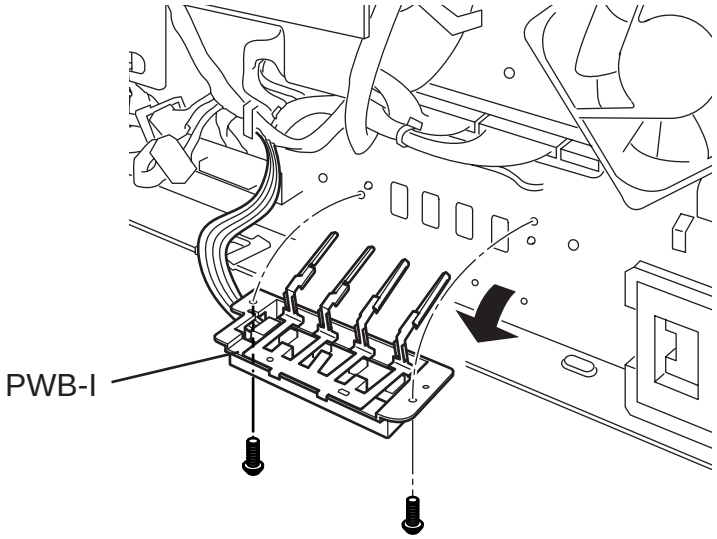
5.2.61 Double feed detecting board (PWB-H)

1. Slide out the MP cassette (1st cassette).
2. Remove one screw and double feed detecting board.



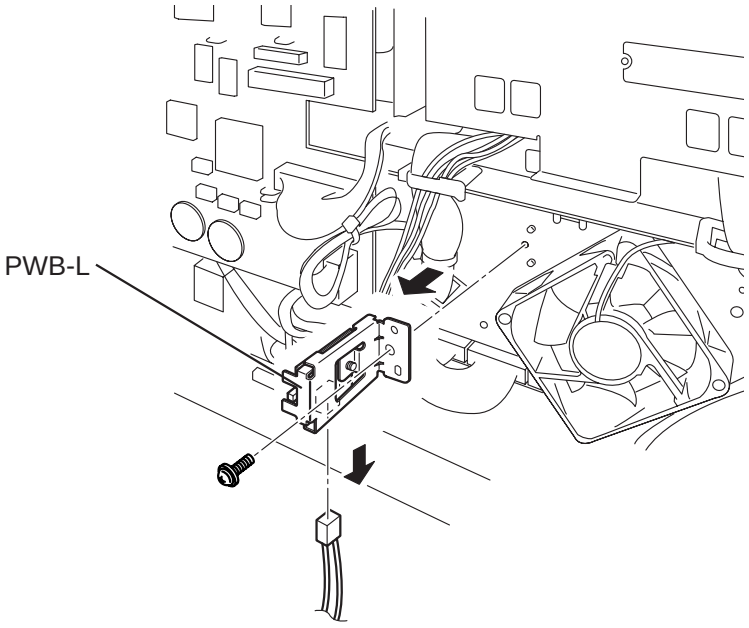
5.2.62 Paper size detecting board (PWB-I)

1. Remove the Rear cover (lower). (See 5.2.48.)
2. Remove two screws and the PWB board cover.
3. Remove Paper size detecting board (PWB-I).



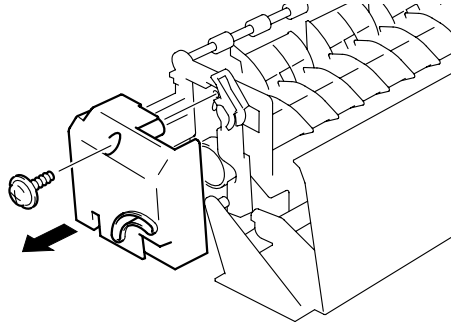
5.2.63 PPM switching board (PWB-L)

1. Remove the Rear cover (lower). (See 5.2.48.)
2. Remove one screw and the PWB-L mounting bracket assembly.
3. Remove PWB-L.

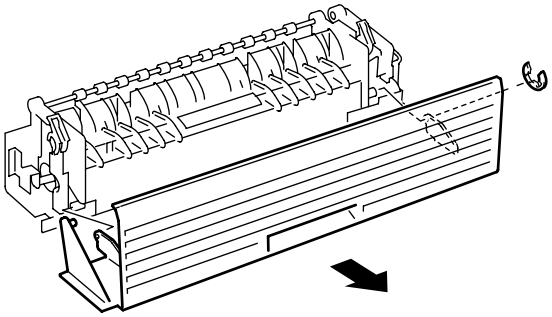


5.2.64 Fuser frame register board (PWB-R)

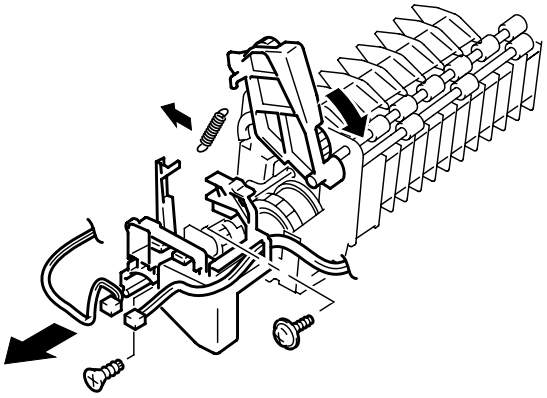
1. Remove the Fuser unit. (See 5.1.5, page 5-14.)
2. Open the Exit Cover of the fusing unit.
3. Remove one screw and the Fusing Front Cover.



3. Snap off one E-ring and remove the Exit Cover.



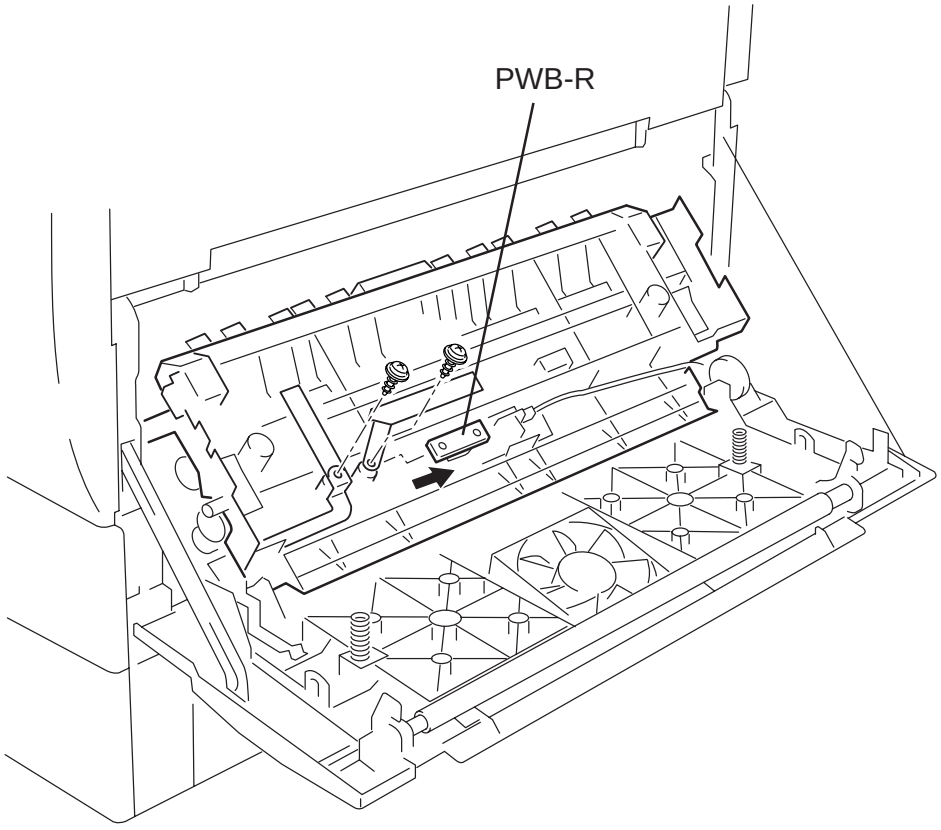
4. Unhook one spring to free the Idle Lever.
5. Remove two harnesses.
6. Remove two screws and the Rear Cover.



7. Remove the PWB-R.

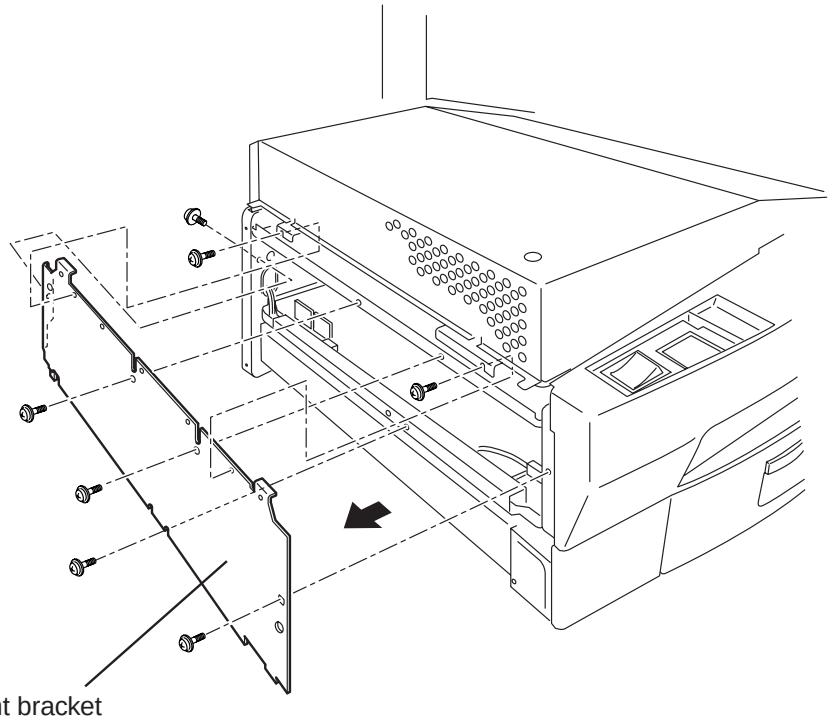
5.2.65 Pre-transfer guide plate register board 1 (PWB-R)

1. Open the side cover.
2. Remove the vertical transport unit.
3. Remove two screws and two ground plate.
4. Remove the PWB-R.



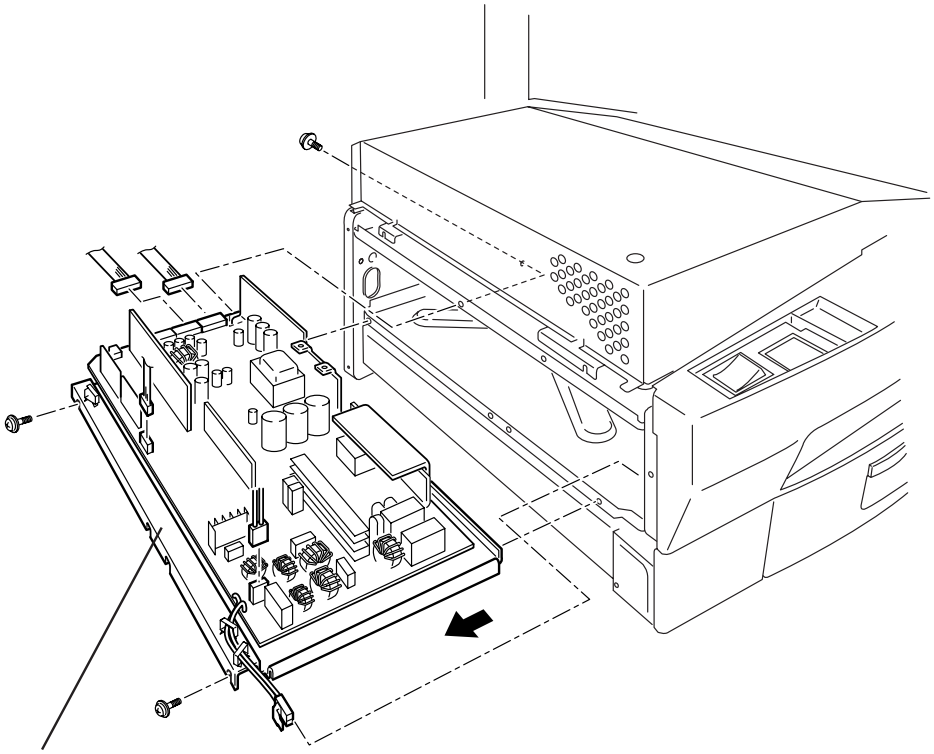
5.2.66 Power supply board (PU1)

1. Remove the rear cover (lower). (See 5.2.48.)
2. Remove the left cover.
3. Remove five screws and Reinforcement bracket.



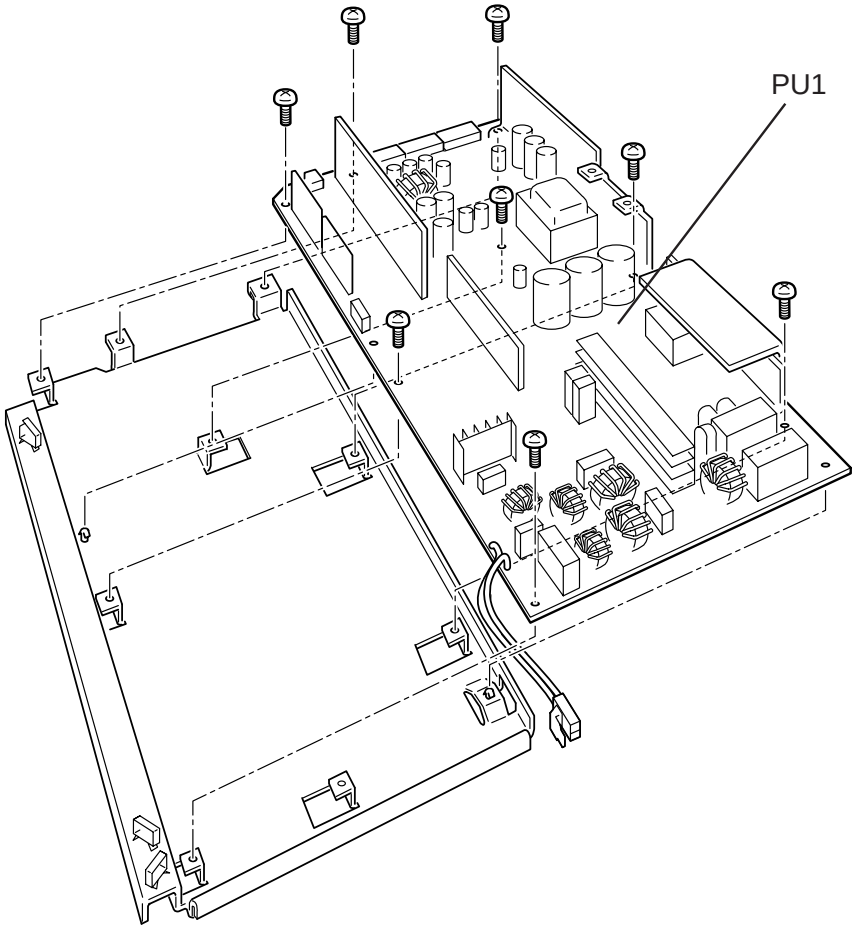
Reinforcement bracket

4. Remove three screws and four connectors, then remove the PU1 mounting bracket assembly.



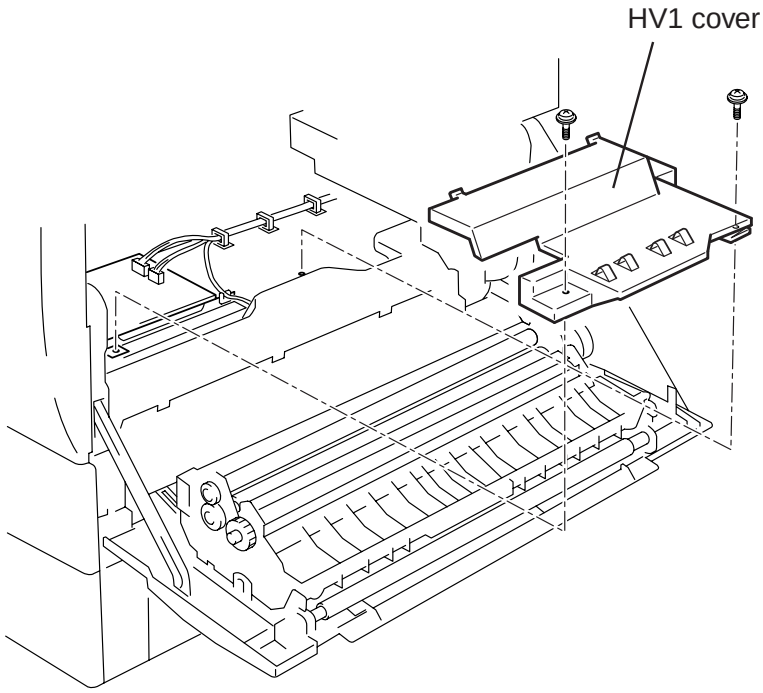
PU1 mounting bracket aseembly

5. Remove eight screws and two tabs, then remove the PU1.

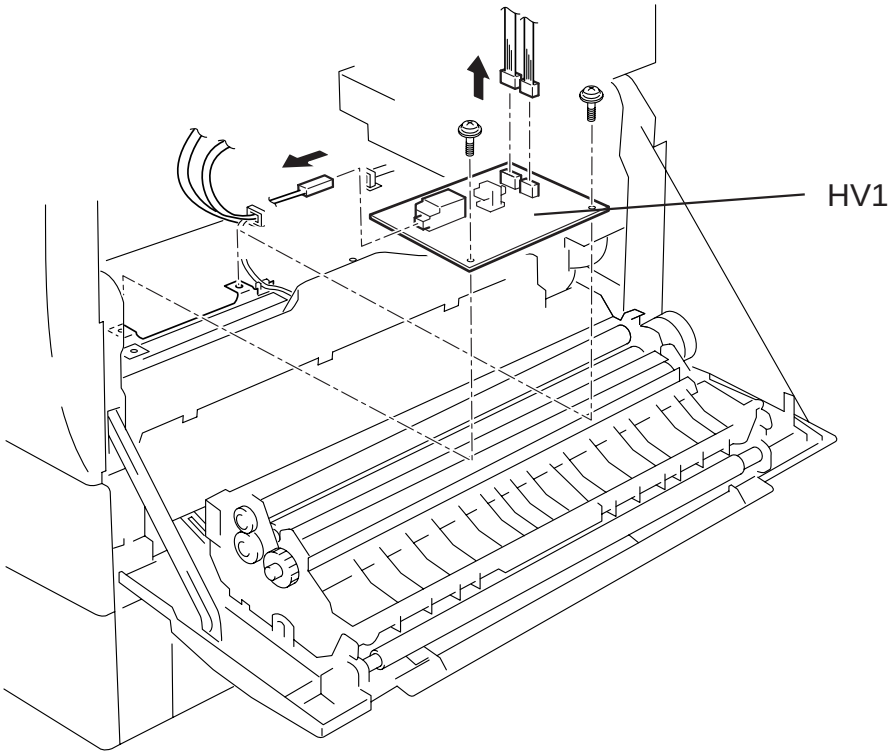


5.2.67 High voltage unit (HV1)

1. Open the side cover.
2. Remove the Imaging cartridge (drum cartridge).
3. Remove two screws and the HV1 cover.



4. Remove two screws and the all connectors, then remove the HV1.

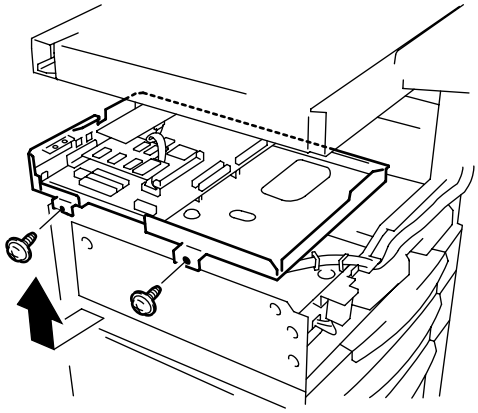


5.2.68 PH unit

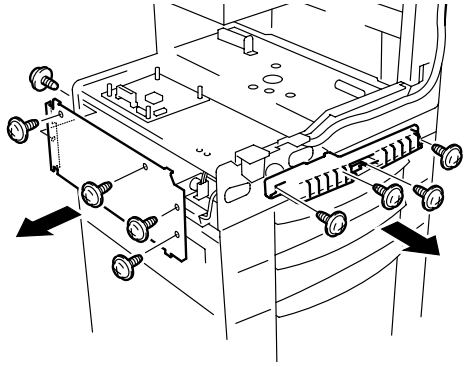
Notes:

- Do not place the PH Unit upside down or subject it to excessive shock.
- Replace the PH Unit as one unit.
- **NEVER** attempt to disassemble or adjust the PH Unit.

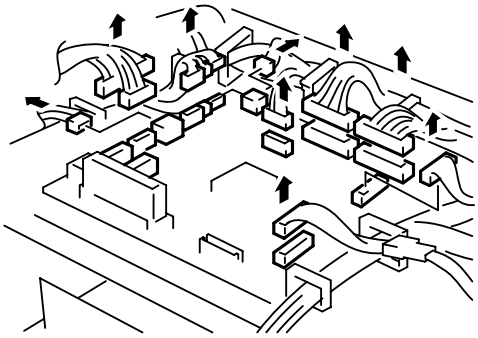
1. Remove the Upper Cover. (See 5.2.54.)
2. Remove Front Cover. (See 5.2.52.)
3. Remove Left Cover. (See 5.2.56.)
4. Remove Rear Cover (lower). (See 5.2.48)
5. Remove two screws and the shield box.
6. Remove two screws and MFB Box Cover.
7. Unplug five connectors of the MFB Board.
8. Remove two screws and the MFB Box Assy.



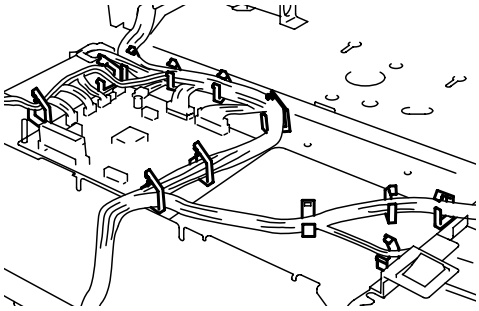
5. Remove five screws and the Reinforcement Bracket.
6. Remove four screws and the handle.



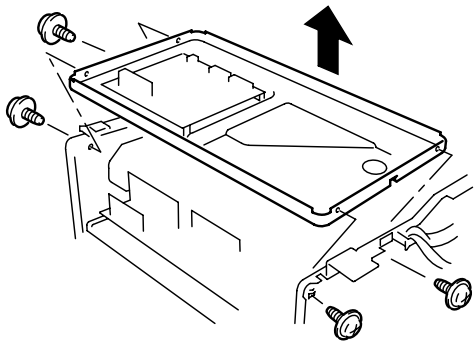
7. Unplug all connectors (13) from Master Board PWB-A.



8. Remove the harness from all cord clamps (12) on the PH Base Plate.

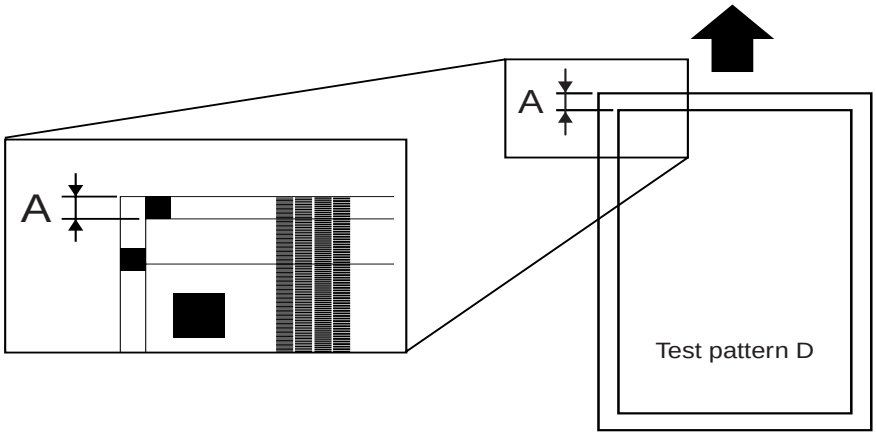


9. Remove four screws and the PH Unit.



5.3 Adjustment

5.3.1 Printer registration (top)



Adjust so that width A on the test pattern D output falls within the following range.

Specification	Adjustment Tool	Setting Range
10 ± 1.5 (mm)	Machine parameter S Machine parameter T	– 12.8 to 12.7 (mm) (0.1 mm step)

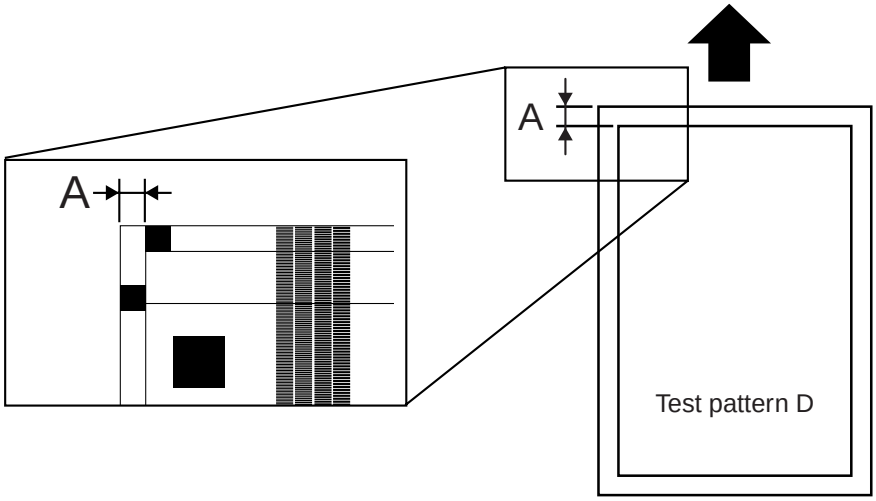
Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Produce a test pattern D with the A3-sized paper.
   (Press **MENU, ✻, 9, Test Pattern Print**. For detail, see page 3-123.)
4. Check to see if width A on the test pattern D meets the specifications.
   If width A falls outside the specified range, perform following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter **S** to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: When you change the setting of Machine Parameter **S**, you must set the same value to Machine Parameter **U**.
Ex.) If you set the “00000010” to the Machine Parameter S:5, you must set the “00000010” to the Machine Parameter U:5, too.
When you change the setting of Machine Parameter **T**, you must set the same value to Machine Parameter **V**.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.2 Printer registration (side)



Adjust so that width A on the test pattern D output falls within the following range.

Specification	Adjustment Tool	Setting Range
10 ± 2.0 (mm)	Machine parameter K Machine parameter L	– 12.8 to 12.7 (mm) (0.1 mm step)

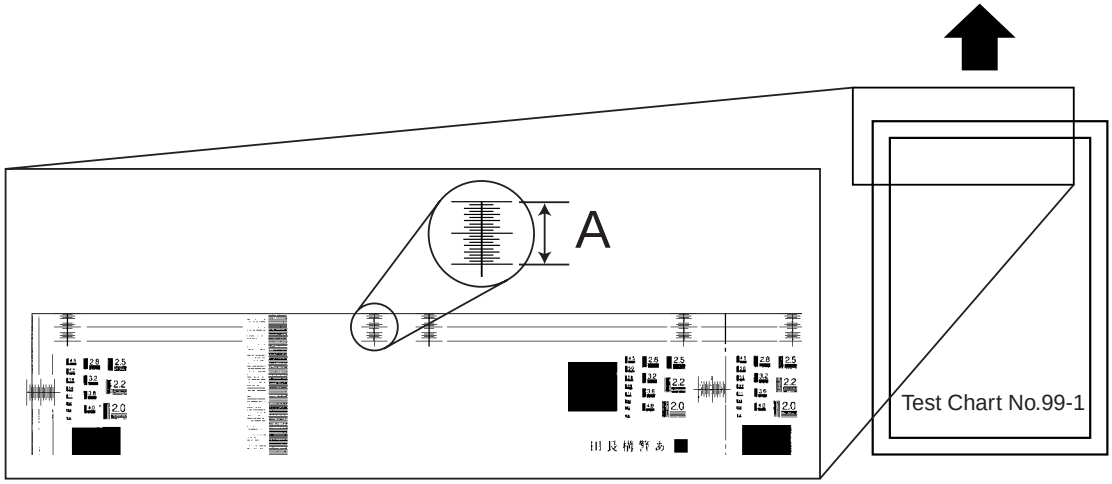
Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Produce a test pattern D with the A3-sized paper.
   (Press **MENU, ✻, 9, Test Pattern Print**. For detail, see page 3-123.)
4. Check to see if width A on the test pattern D meets the specifications.
   If width A falls outside the specified range, perform following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter **K** to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: When you change the setting of Machine Parameter **K**, you must set the same value to Machine Parameter **M**.
Ex.) If you set the “00000010” to the Machine Parameter K:5, you must set the “00000010” to the Machine Parameter M:5, too.
When you change the setting of Machine Parameter **L**, you must set the same value to Machine Parameter **N**.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.3 FBS registration (top)



Adjust so that width A on the copy falls within the following range.

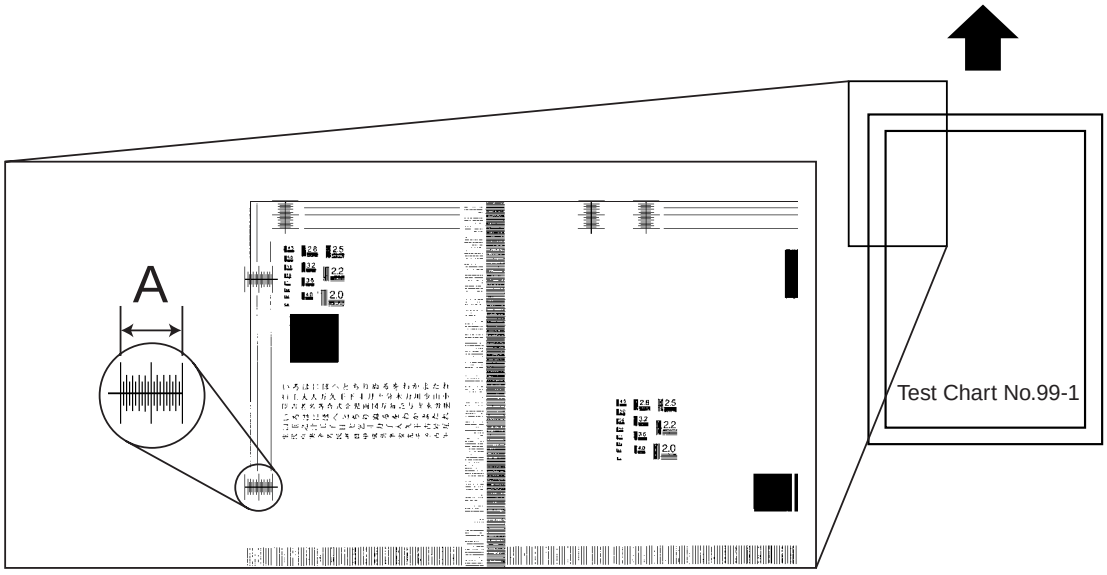
Specification	Adjustment Tool	Setting Range
10 ± 0.7 (mm)	Machine parameter B:8	– 4.34 to 4.34 (mm) (0.14 mm step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Place the Muratec Test Chart No. 99-1 on the FBS glass.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Check to see if width A on the copy meets the specifications.
   If width A falls outside the specified range, perform the following steps to make the adjustment.
6. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
7. Adjust the setting of Machine Parameter B:8 to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.4 FBS registration (side)



Adjust so that width A on the copy falls within the following range.

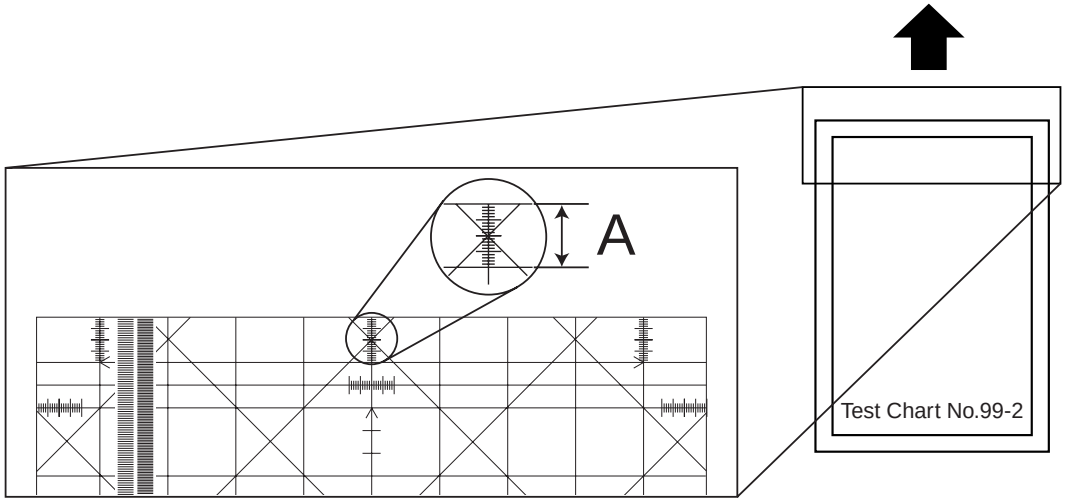
Specification	Adjustment Tool	Setting Range
10 ± 0.7 (mm)	Machine parameter B:5	– 5.25 to 5.25 (mm) (0.21 mm step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Place the Muratec Test Chart No. 99-1 on the FBS glass.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Check to see if width A on the copy meets the specifications.
   If width A falls outside the specified range, perform the following steps to make the adjustment.
6. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
7. Adjust the setting of Machine Parameter B:5 to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.5 ADF registration (top)



Adjust so that width A on the copy falls within the following range.

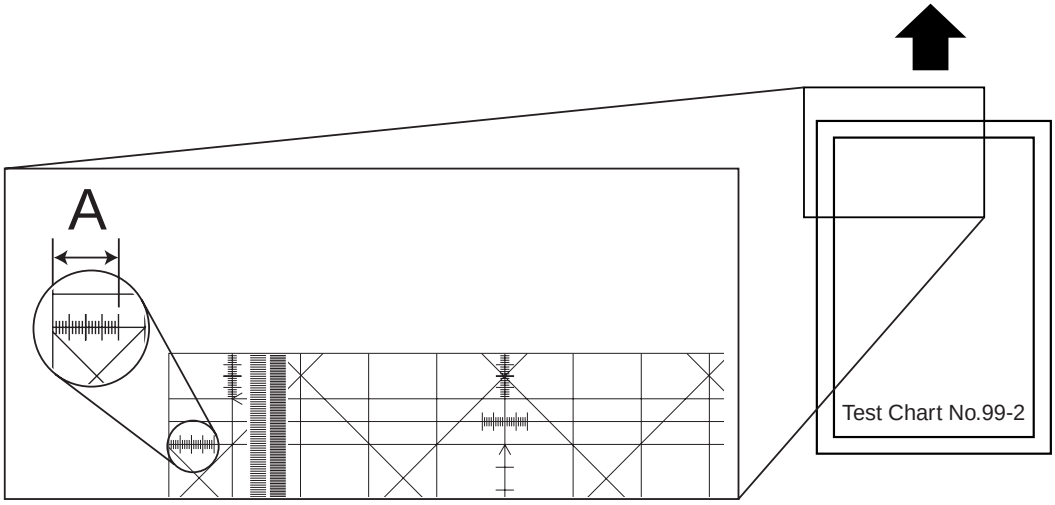
Specification	Adjustment Tool	Setting Range
20 ± 1.3 (mm)	Machine parameter B:3	– 10.71 to 10.71 (mm) (0.17 mm step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Place the Muratec Test Chart No. 99-2 in the ADF.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Check to see if width A on the copy meets the specifications.
   If width A falls outside the specified range, perform the following steps to make the adjustment.
6. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
7. Adjust the setting of Machine Parameter B:3 to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.6 ADF registration (side)



Adjust so that width A on the copy falls within the following range.

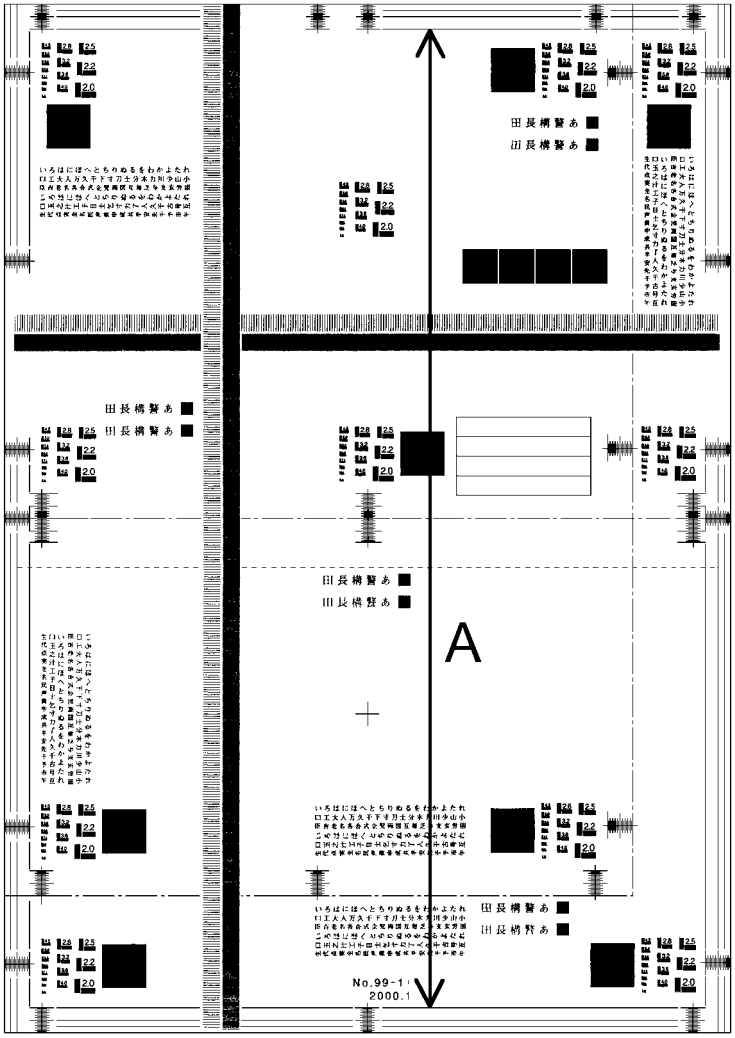
Specification	Adjustment Tool	Setting Range
20 ± 1.3 (mm)	Machine parameter B:0	– 5.25 to 5.25 (mm) (0.21 mm step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
3. Place the Muratec Test Chart No. 99-2 in the ADF.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Check to see if width A on the copy meets the specifications.
   If width A falls outside the specified range, perform the following steps to make the adjustment.
6. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
7. Adjust the setting of Machine Parameter B:0 to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

Important: After adjustment, you must re-enter the setting of Unique Switch F:2, you changed in step 2.

5.3.7 FBS zoom adjustment (Vertical)



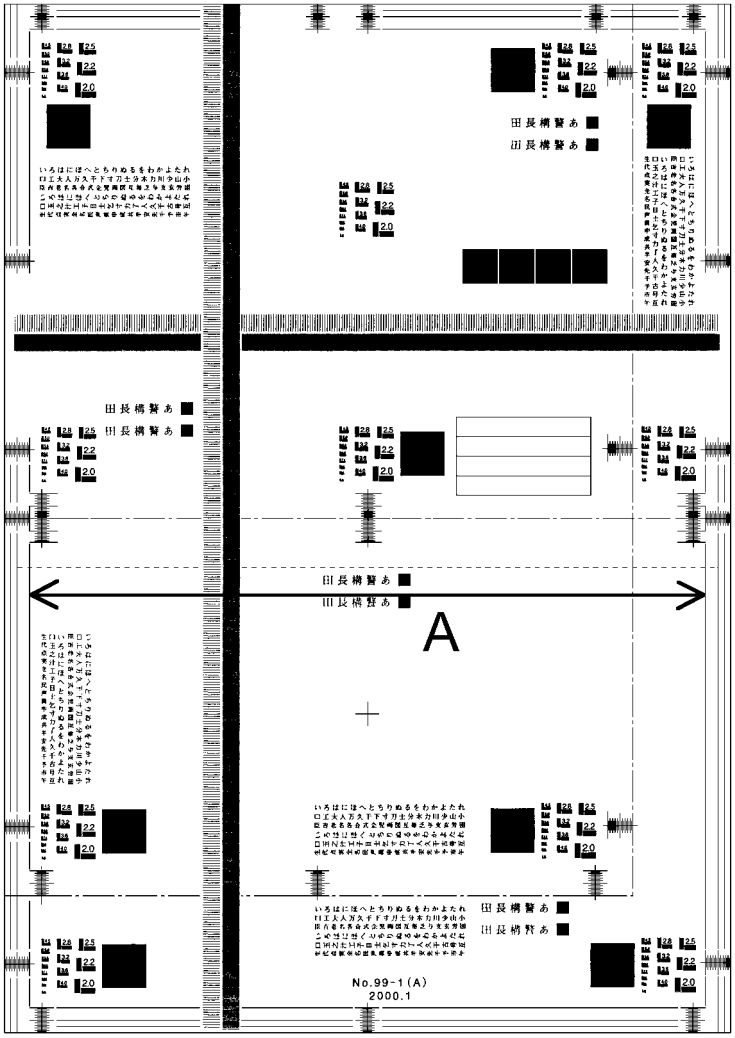
The difference should be within ± 0.4% (1.6 mm) of the actual length of A on the test chart No.99-1. Adjust so that the following specifications are satisfied with the length of A (400 mm) on the test chart No.99-1.

Zoom ratio	Specification	Adjustment Tool	Setting Range
100 %	400 ± 1.6 (mm) (400 ± 0.4%)	Machine parameter B:7	– 6.0 to 6.0 (mm) (– 1.5 to 1.5 %) (0.1 % (0.4 mm) step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Place the Muratec Test Chart No. 99-1 on the FBS.
3. Make two copies of it on the A3-sized paper with 100 % magnification.
4. Measure the length of A on the second copy to find the difference.
   If length A falls outside the specified range, perform the following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter B:7 to meet the specification.
   If the length A is shorter than specification, increase value.
   If the length A is longer than specification, decrease value.

5.3.8 FBS zoom adjustment (Horizontal)



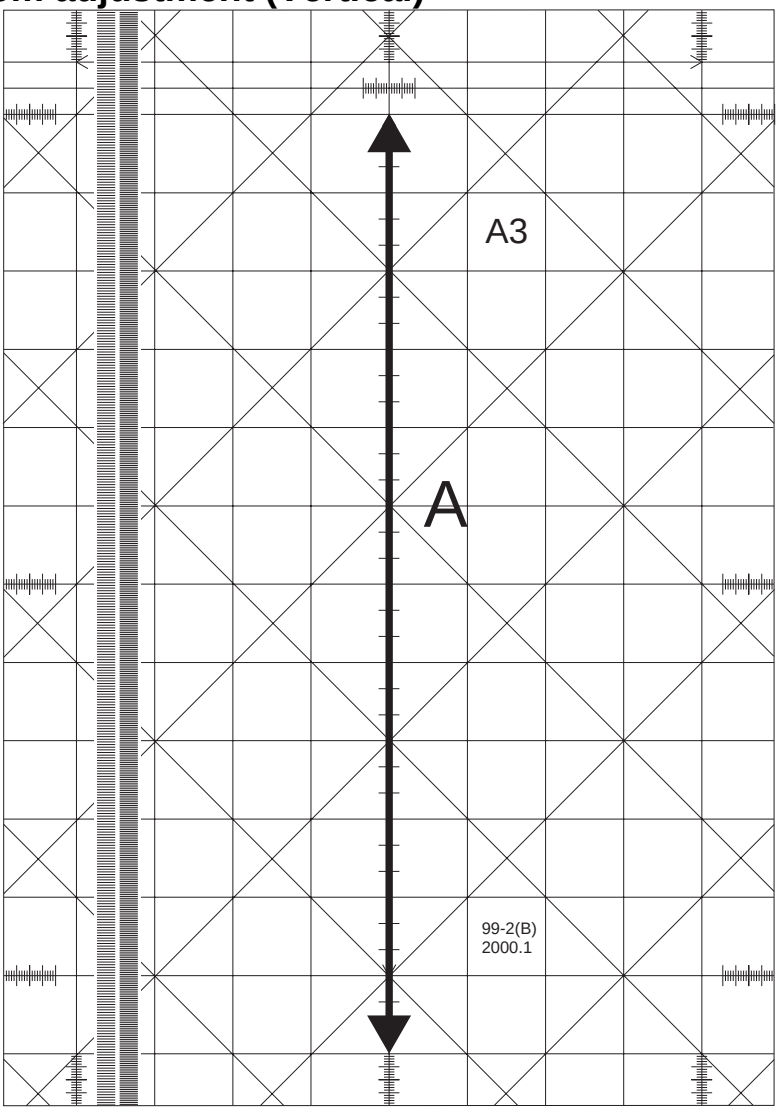
The difference should be within ± 0.4% (1.1 mm) of the actual length of A on the test chart No.99-1. Adjust so that the following specifications are satisfied with the length of A (277 mm) on the test chart No.99-1.

Zoom ratio	Specification	Adjustment Tool	Setting Range
100 %	277 ± 1.1 (mm) (277 ± 0.4%)	Machine parameter B:6	– 4.155 to 4.155 (mm) (– 1.5 to 1.5 %) (0.1 % (0.277 mm) step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Place the Muratec Test Chart No. 99-1 on the FBS.
3. Make two copies of it on the A3-sized paper with 100 % magnification.
4. Measure the length of A on the second copy to find the difference.
   If length A falls outside the specified range, perform the following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter B:6 to meet the specification.
   If the length A is shorter than specification, increase value.
   If the length A is longer than specification, decrease value.

5.3.9 ADF zoom adjustment (Vertical)



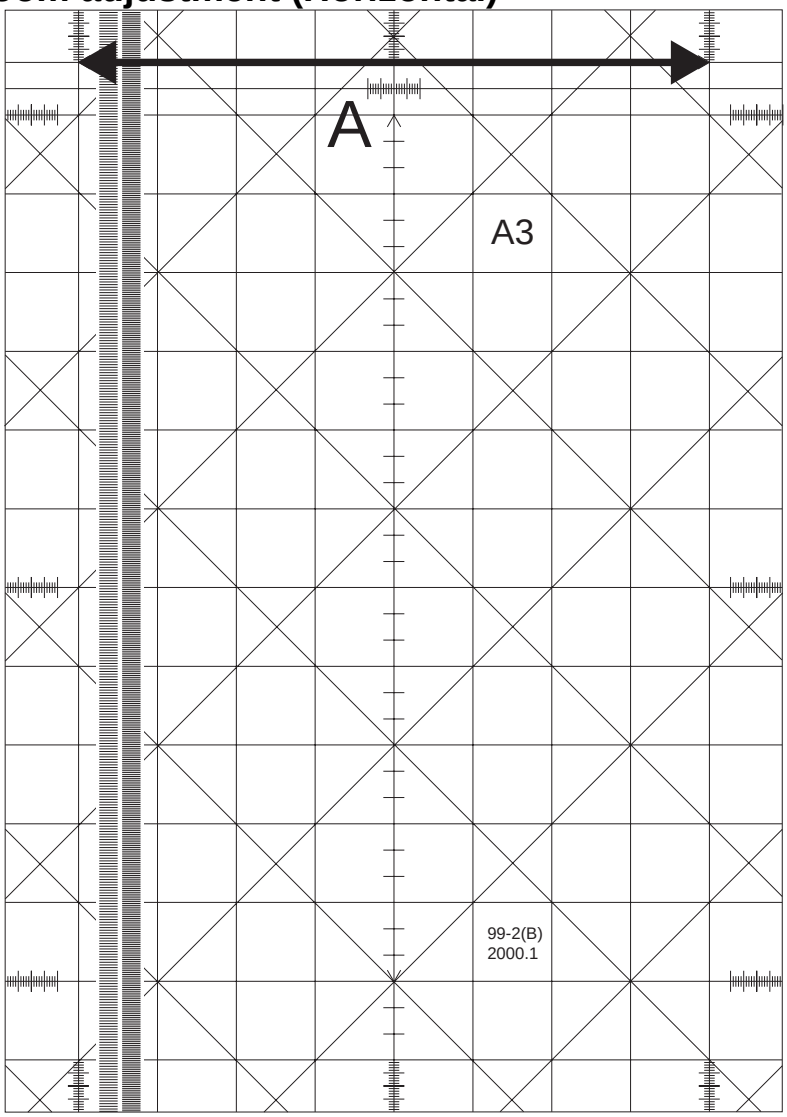
The difference should be within ± 0.6% (2.0 mm) of the actual length of A on the test chart No.99-2. Adjust so that the following specifications are satisfied with the length of A (330 mm) on the test chart No.99-2.

Zoom ratio	Specification	Adjustment Tool	Setting Range
100 %	330 ± 2.0 (mm) (330 ± 0.6%)	Machine parameter B:2	– 4.95 to 4.95 (mm) (– 1.5 to 1.5 %) (0.1 % (0.33 mm) step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Place the Muratec Test Chart No. 99-2 in the ADF.
3. Make two copies of it on the A3-sized paper with 100 % magnification.
4. Measure the length of A on the second copy to find the difference.
   If length A falls outside the specified range, perform the following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter B:2 to meet the specification.
   If the length A is shorter than specification, increase value.
   If the length A is longer than specification, decrease value.

5.3.10 ADF zoom adjustment (Horizontal)



The difference should be within ± 0.6% (1.5 mm) of the actual length of A on the test chart No.99-2. Adjust so that the following specifications are satisfied with the length of A (240 mm) on the test chart No.99-2.

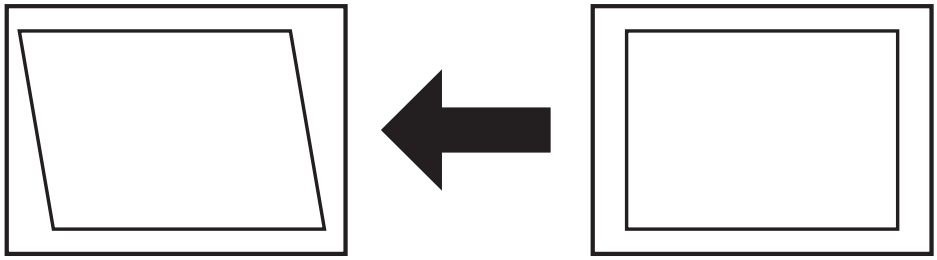
Zoom ratio	Specification	Adjustment Tool	Setting Range
100 %	240 ± 1.5 (mm) (240 ± 0.6%)	Machine parameter B:1	– 3.6 to 3.6 (mm) (– 1.5 to 1.5 %) (0.1 % (0.24 mm) step)

Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Place the Muratec Test Chart No. 99-2 in the ADF.
3. Make two copies of it on the A3-sized paper with 100 % magnification.
4. Measure the length of A on the second copy to find the difference.
   If length A falls outside the specified range, perform the following steps to make the adjustment.
5. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
6. Adjust the setting of Machine Parameter B:1 to meet the specification.
   If the length A is shorter than specification, increase value.
   If the length A is longer than specification, decrease value.

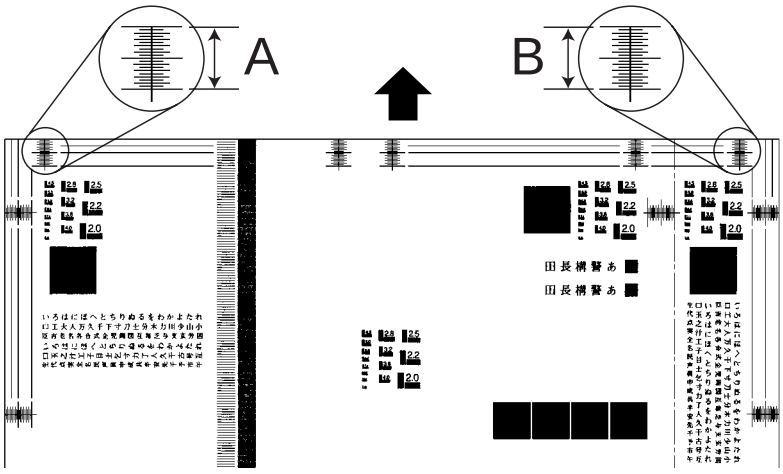
5.3.11 Adjust the image deformation caused by Mirror carriage A and B at the incorrect position

5.3.11.1 When the copy using the FBS is deformation as shown below, adjust the Mirror carriage position.



Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
   Important: After adjustment, you must re-enter the setting of Unique Switch F:2.
3. Place the Muratec Test Chart No. 99-1 on the FBS.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Measure the length of A and B on the copy to find the difference.
6. Subtract B from A.
   If the difference falls outside the specified range, perform the following steps to make the adjustment.
   Specification: The difference of A and B should be within ± 1.1 mm.



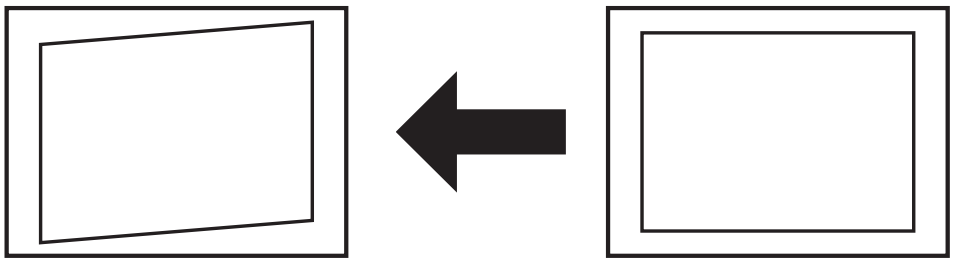
If the A > B, move the front side of Mirror carriage A to the leftward.
If the A < B, move the front side of Mirror carriage A to the rightward.
Ex) If the difference is –2mm, move the front side of Mirror carriage A 2mm to the rightward.

To move the front side of the mirror carriage:

Ex.) If measured vertical length A is 10 mm, and B is 6 mm.
Subtract B from A. (10-6= 4 mm)

1. Loosen a front side retainer screw of the Mirror carriage A.
2. Move the front side of the Mirror carriage A 4 mm to the leftward.
3. Secure the Mirror carriage A.

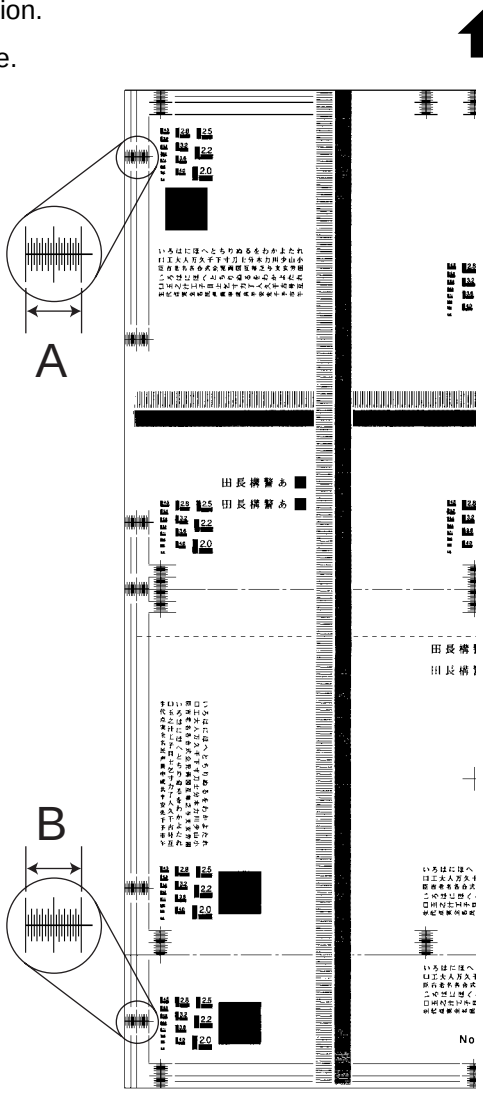
5.3.11.2 When the copy using the FBS is deformation as shown below, adjust the Mirror carriage position.



Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Use the Unique Switch F:2 to adjust the printing margin to 0 mm. (Press **MENU, ✻, 4**. For detail, see page 3-114.)
   Important: After adjustment, you must re-enter the setting of Unique Switch F:2.
3. Place the Muratec Test Chart No. 99-1 on the FBS.
4. Make a copy of it on the A3-sized paper with 100 % magnification.
5. Measure the width of C and D on the copy to find the difference.
6. Subtract D from C.
   If the difference falls outside the specified range, perform the following steps to make the adjustment.
   Specification: The difference of C and D should be within ± 1.5 mm.

   If the C > D, move the front side of Mirror carriage B to the rightward.
   If the C < D, move the front side of Mirror carriage B to the leftward.
   Ex) If the difference is –2mm, move the front side of Mirror carriage B 2mm to the leftward.



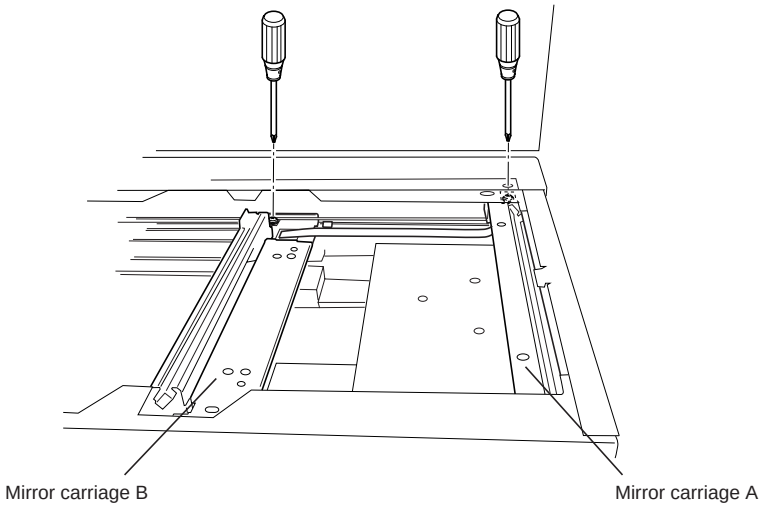
To move the front side of the mirror carriage:

Ex.) If measured vertical length C is 10 mm, and D is 6 mm. Subtract D from C. (10-6= 4 mm)

1. Loosen a front side retainer screw of the Mirror carriage B.
2. Move the front side of the Mirror carriage B 4 mm to the rightward.
3. Secure the Mirror carriage B.

5.3.12 Adjustment of the position of Mirror carriage A and B

1. Temporarily loosen the screw of the belt retainer to move the mirror carriages.
2. Move the Mirror carriage A and B to the right end until they stop. Secure the carriages at this position.
3. Tighten the screw of the belt retainer.

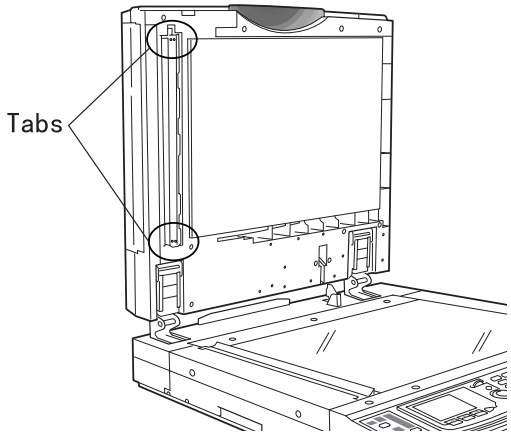


Note: After this adjustment, confirm the copy image quality and adjust the image deformation, if necessary.

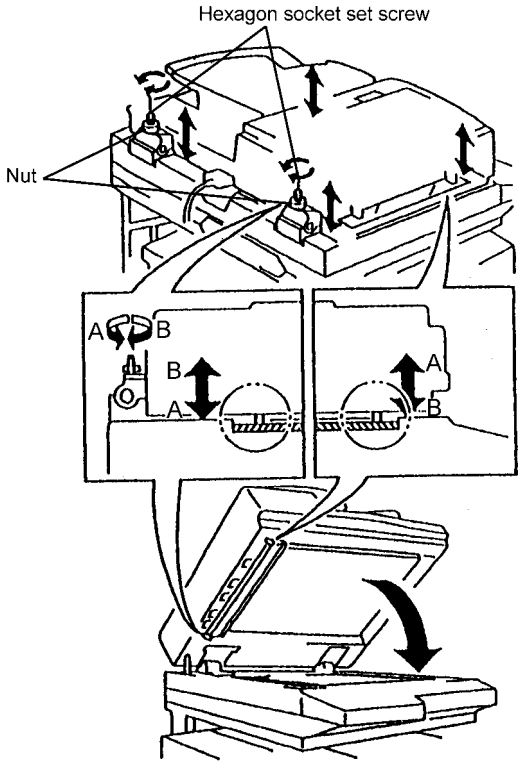
5.3.13 Adjustment of height of ADF

Adjust the height of the ADF (the clearance of the document pass) to pass the document properly.

1. Confirm that the tabs under the platen cover assembly (see the illustration below) touch the contact glass when the platen cover is closed. If not, adjust the height of ADF by following procedure.



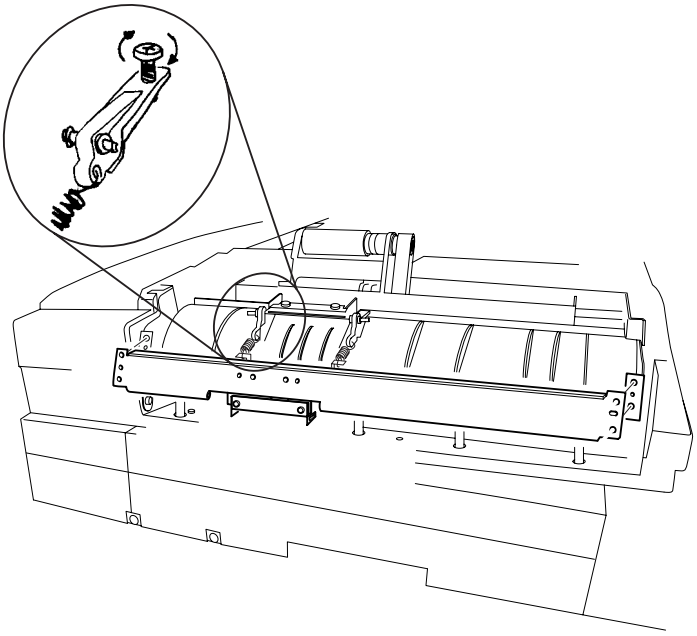
2. Remove the platen top cover. (See page 5-25.)
3. Loosen the nut on the hinges R and L, and turn the hexagon socket set screw to adjust the height of the ADF and the skew of the platen cover assembly.
   If turn the hexagon socket set screw counter-clockwise, the front side will be up and rear side will be down.
   If turn the hexagon socket set screw clockwise, the front side will be down and rear side will be up.



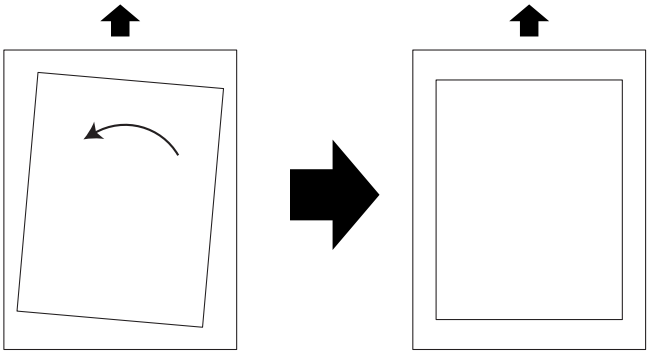
Note: Make sure to tighten the nuts after this adjustment.
Note: If this adjustment for the height of the ADF is not enough, it can cause the skew or the image deformation.

5.3.14 Adjustment of the skew on the ADF

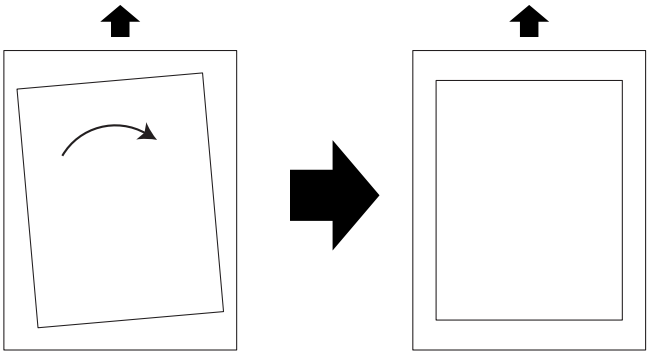
1. Turn the adjusting screw of the Press guide B to adjust the skew.



If turn the adjustment screw clockwise, the copied image will be turned counter-clockwise.



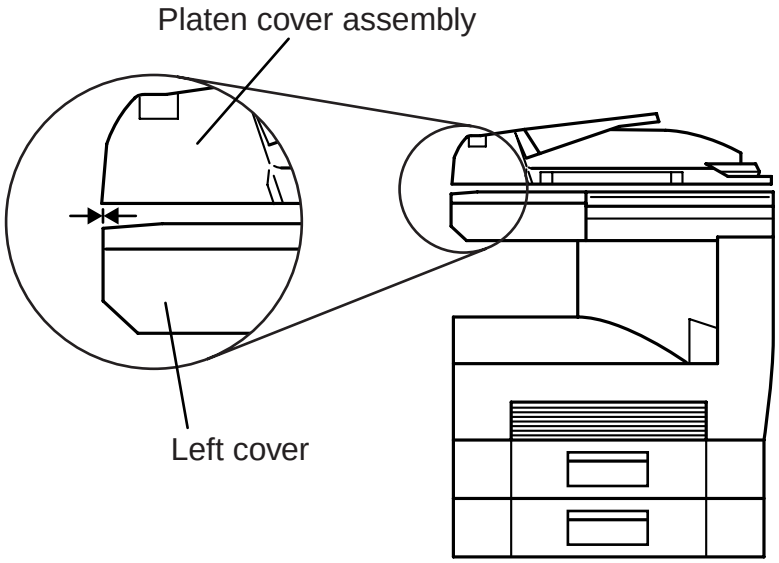
If turn the adjustment screw counter-clockwise, the copied image will be turned clockwise.



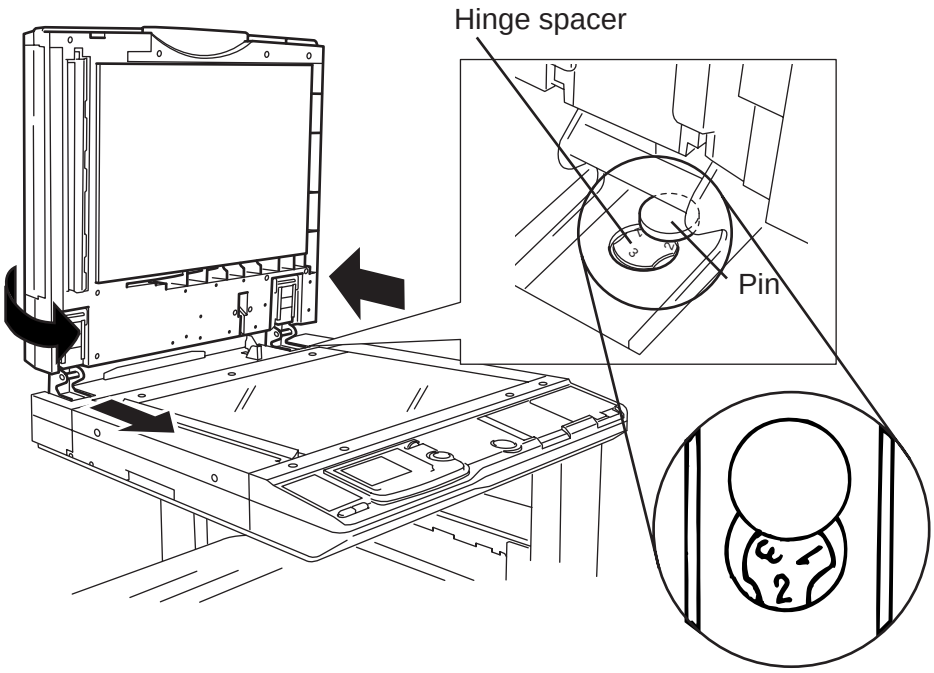
5.3.15 Adjustment of the platen cover position

Adjust the platen cover to pass the document properly.

1. Confirm that the hinge L is set at the proper position.
   Also confirm the difference between platen cover and the left cover at front and at rear on the side.



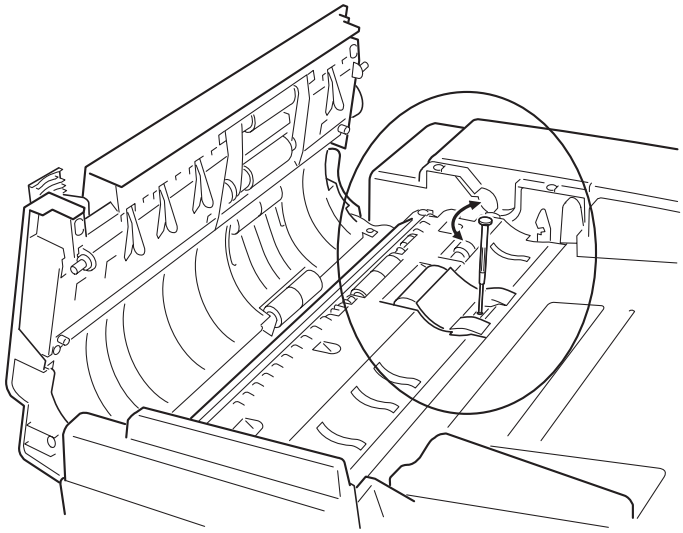
2. Turn the hinge plate to set the platen cover and left cover to be parallel.
   Adjust the installation position on the side of the hinge R.
   If the front side of the platen cover shifts to the left, turn the hinge plate to set the large number at the front.
   If the front side of the platen cover shifts to the right, turn the hinge plate to set the smaller number at the front.



Note: Refer to the “Reassemble the platen cover assembly” on the page 5-33 for installing the platen cover assembly.

5.3.17 Adjustment of Retard roller pressure

When the bad document transportation or document separation is occurs even if the rollers dose not wear or uncleanness, adjust the Retard roller pressure.



Insert the precision screwdriver into the hole of the Inner guide A as illustration. Then turn the separation pressure adjustment screw with referring the following table.

Rotate direction	Retard roller pressure	Document	Document Separation
Counterclockwise	Up	To be good	To be bad
Clockwise	Down	To be bad	To be good

Section6
Options

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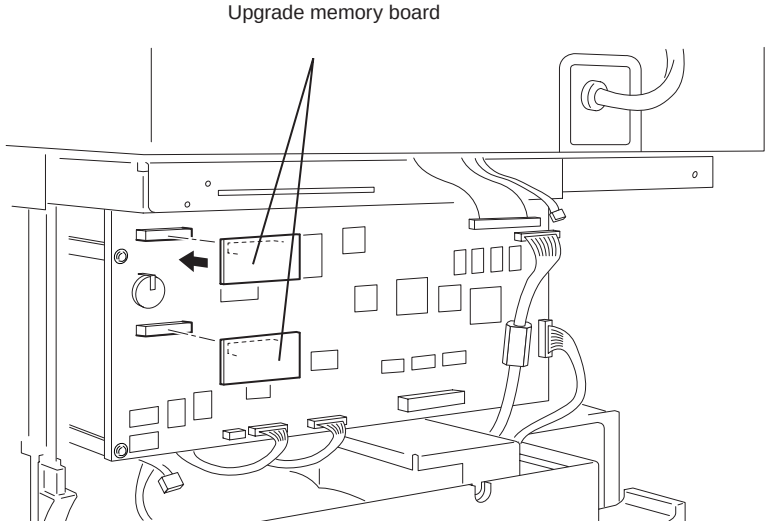
9. RS-232C Interface.....6-96
10. OP-100: PCL6 printer controller .....TBD
11. NP-200: Network printer controller .....TBD

6.1 Memory Upgrade

6.1.1 Memory Upgrade

An optional 8 or 24 MB document memory upgrade is available for the MFX-2500.
To install the memory upgrade PCB:

1. Turn the machine off and remove the power cord and line cord.
2. Remove the rear cover.
3. Remove the shielding plate.
4. Connect the connector on the memory upgrade PCB to the connector (P5A) or connector (P5B) on the machine's main control PCB.



The following table shows the combination of memory upgrade to be installed to each connector (P5A and/of P5B). Please install the memory upgrade PCB according to the following table.

Built-in	Connector P5A	Connector P5B	Total memory	Storage capacity
8 MB	—	—	8 MB (8192 KB)	650 pages
8 MB	+ 8 MB	—	16 MB (16384 KB)	650+680 ⇐ Standard Spec.
8 MB	+ 8 MB	+ 8 MB	24 MB (24576 KB)	650+680+680
8 MB	+ 24 MB	—	32 MB (32768 KB)	650+2040
8 MB	+ 8 MB	+ 24 MB	40 MB (40960 KB)	650+680+2040
8 MB	+ 24 MB	+ 24 MB	56 MB (57644 KB)	650+2040+2040

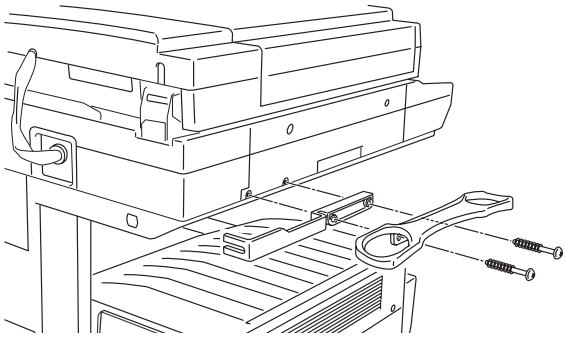
5. Connect the connectors and plug the power cord and turn the machine on.
6. Clear the DRAM. (In Fax mode, press **MENU**, *****, **G**, **[Enter].**)
   Important: The DRAM clear setting will erase all documents in memory.
7. Perform a DRAM test whenever an optional memory upgrade is added to the unit.
   (Press **MENU**, *****, **B**, **F, [Enter]**. See page 3-128 for more detail of the DRAM test.)
8. Print the Fax Setting List. (In Fax mode, press **MENU**, **J**, **[List]**).
   Check the memory amount printed below the Name and confirm the amount. The memory amount of the standard memory (16 MB) is 16384 KB.
9. Turn the machine off and unplug the power cord.
11. Re-attach the shielding plate.
12. Re-attach the rear cover.
13. Plug the line cord and power cord.

6.2 Telephone Handset

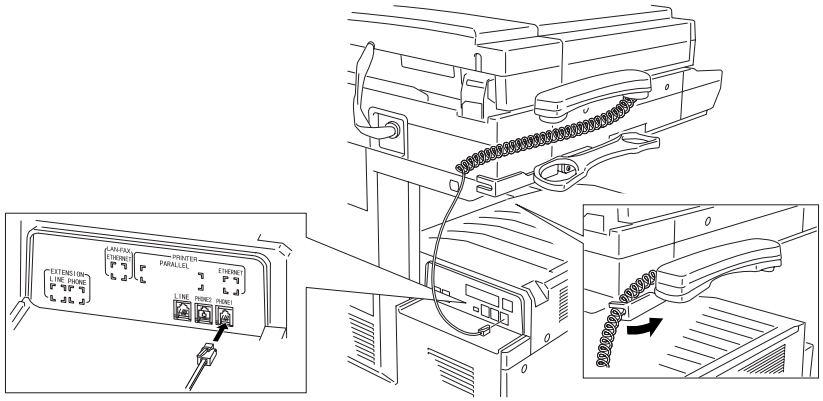
6.2.1 Attaching the optional handset

Here is how to attach the handset.

1. Remove the two screw caps.
2. Using a Phillips-head screwdriver, attach the cord holder and the handset cradle to the left side of your machine, with the screws included with the cradle.

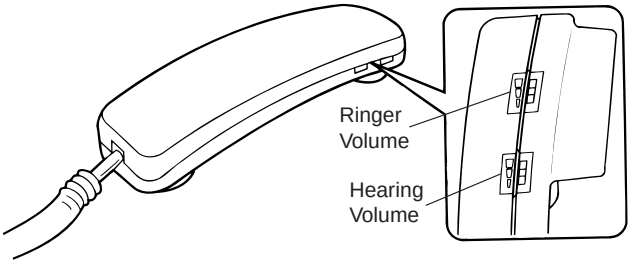


3. Plug one end of the handset cord (it's curled) into the **PHONE1** jack on the rear of your machine.
4. Plug the other end of the handset cord into the jack on the handset. If connected to a phone line, your machine is now "off-hook."
5. Place the telephone handset onto the handset cradle. The cradle will press the handset's "flash" button, hanging up the handset.
   Note: Make the curled cord to be held with the cord holder as shown at right.



6.2.2 Adjusting handset

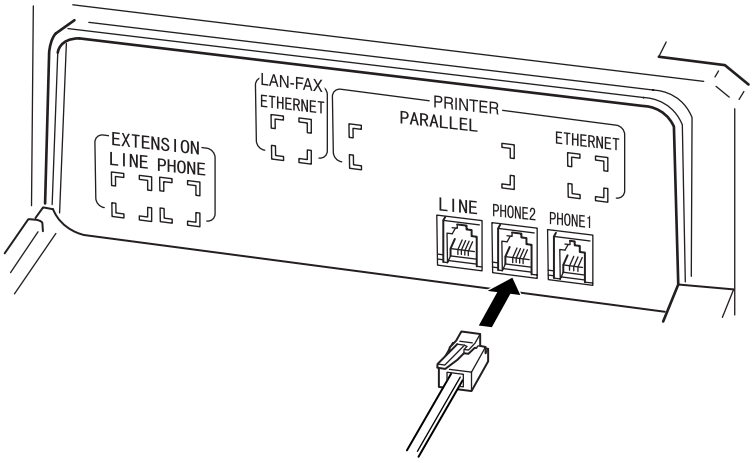
The small switches on the side of your machine's handset adjust the ringer volume and the receiver volume.



Ringer Volume Control — Adjust the ringer volume to one of three settings:
High, Medium, or Low.
Hearing Volume Control — If you are hard to hear the remote person's voice, adjust the receiver volume to one of three settings; High, Medium, or Low.

Attaching a second phone

If you attach a second phone, plug the phone cable from a second phone into the **PHONE2** jack on the rear side of the machine.



6.3 Mechanical Page Counter

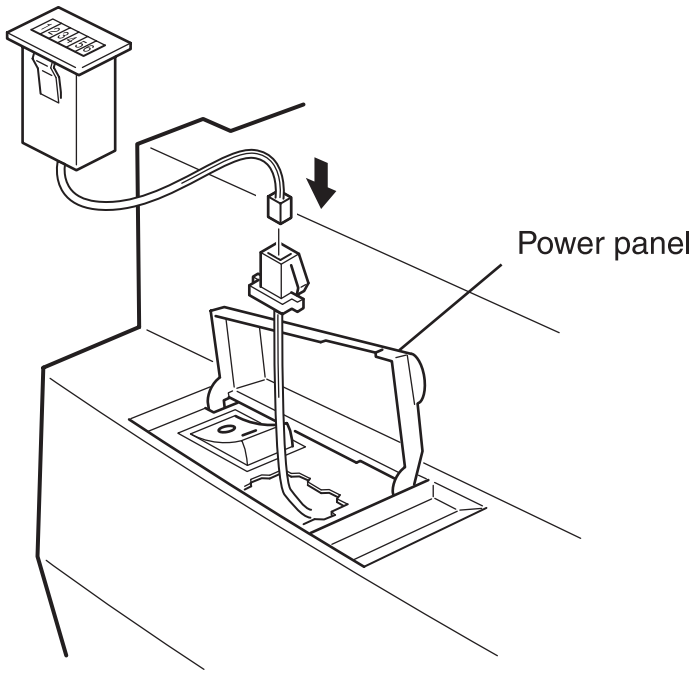
6.3 Attaching the optional page counter

The page counter shows the total number of pages the machine has printed.

Note: This device counts up to 999,999 pages. If more pages are printed, the counter resets to zero and begins counting the new pages from that point.

To install the page counter:

1. Turn the power off.
2. Open the power panel.
3. Use cutting pliers to gently punch out the perforated panel. You will install the page counter through this hole.
4. Pull the blue and red connecting wires out of hole. You will take a connector for the page counter.
5. Connect the counter connector to this connector, as shown below:



6 Insert the page counter into the hole, being careful to put the connecting wires in the hole first. The counter will “click” into place when inserted correctly.

Installation is completed.
The machine will now count the number of pages it prints.

6.4 PAPER FEED UNIT

6.4 PAPER FEED UNIT 6-9
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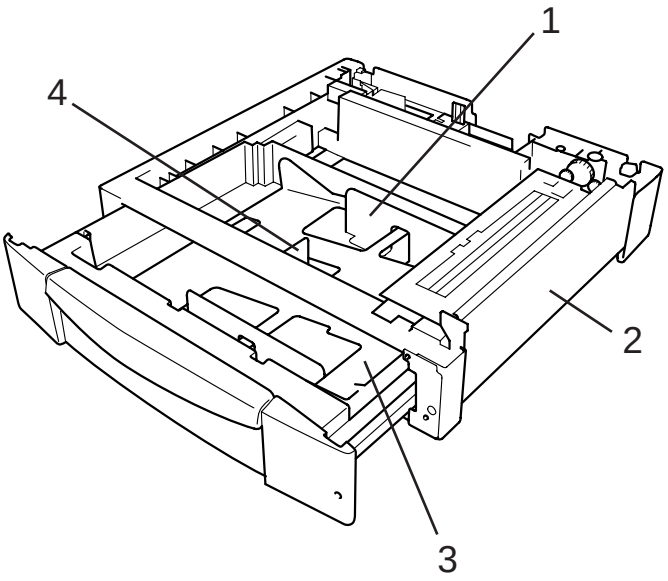
6.4.1 GENERAL, MECHANICAL/ELECTRICAL

6.4.1.1 SPECIFICATIONS

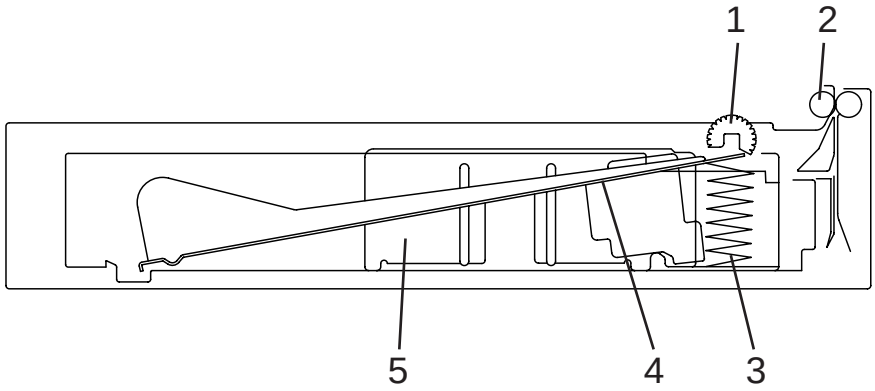
Type	:	Add-on paper source unit
Installation	:	Mounted beneath upper cassette of machine
Type of Paper	:	Plain paper (60 to 90 g/m² or 16 to 24 lbs.), recycled paper (60 to 90 g/m² or 16 to 24 lbs.)
Paper Size	:	B5L/C to A3L or 8.5” ×11”L/C to 11” × 17”L (L: Lengthwise; C: Crosswise)
Registration	:	Center
Capacity	:	500 sheets
Power Requirements	:	DC24V ±10%, DC5V ±10% (supplied from main unit)
Power Consumption	:	10W or less
Dimensions	:	535 (W) × 544.7 (D) × 127.5 (H) mm or 21 (W) × 21.5(D) × 5 (H) inches
Weight	:	6.9 kg or 15 lbs.
Environmental Requirements	:	Same as main unit

6.4.1.2 PARTS IDENTIFICATION



1. Edge Guide
2. Side Cover
3. Paper Lifting Plate
4. Trailing Edge Stop

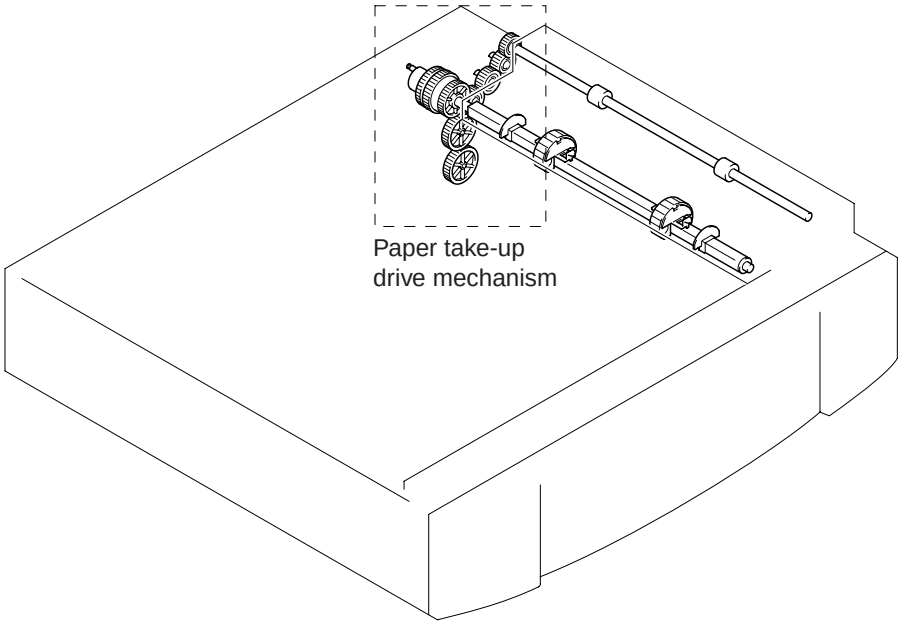
6.4.1.3 CROSS-SECTIONAL VIEW



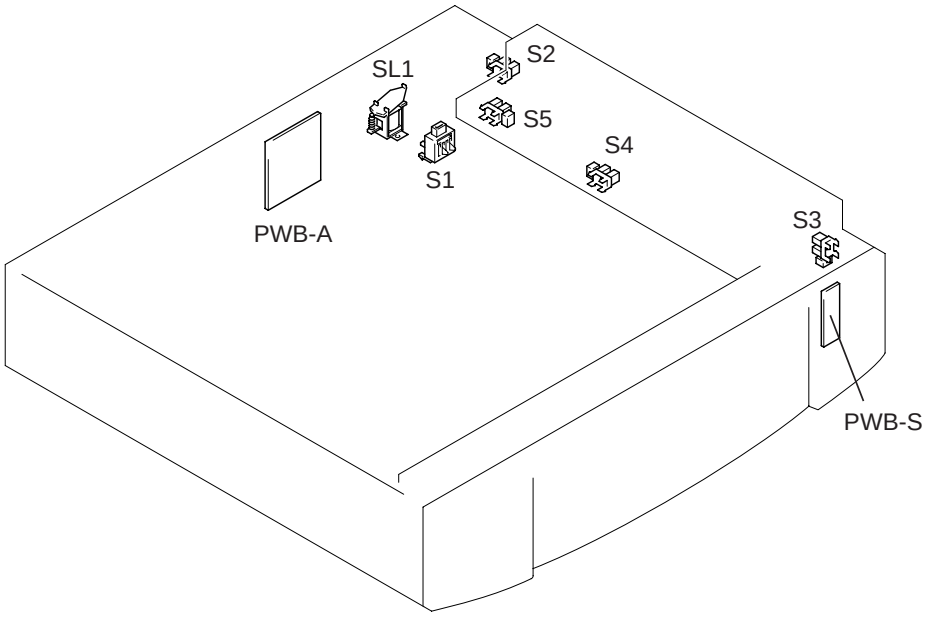
1. Paper Take-Up Roll
2. Vertical Transport Roller
3. Paper Lifting Spring
4. Paper Lifting Plate
5. Edge Guide

6.4.1.4 DRIVE SYSTEM

Drive from the main drive motor of the main unit is transmitted to their paper take-up drive mechanisms via a gear train.



6.4.1.5 ELECTRICAL COMPONENTS LAYOUT



Symbol	Name	Symbol	Name
PWB-A	Cassette Main Board	S2	Side Cover Set Sensor
PWB-S	Paper Size Detecting Board	S3	Take-Up Sensor
SL1	Take-Up Solenoid	S4	Paper Empty Sensor
S1	Cassette Set Switch	S5	Paper Near Empty Sensor

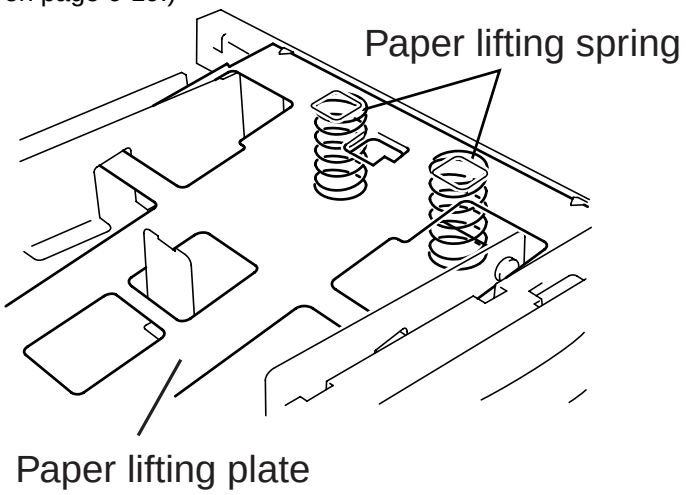
6.4.1.6 MECHANICAL OPERATIONS

6.4.1.6.1 Edge Guide and Trailing Edge Stop

The fixed paper size cassette has the Edge Guide and Trailing Edge Stop screwed into fixed positions.

6.4.1.6.2 Paper Lifting Plate

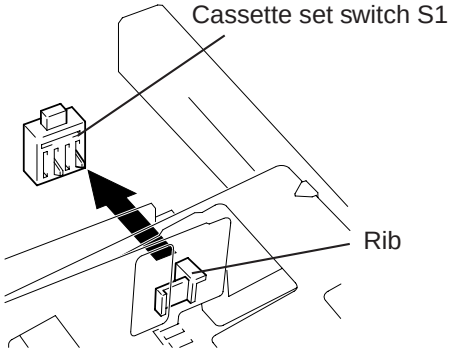
- The Paper Lifting Plate of each cassette is raised at all times by two Paper Lifting Springs.
- The type of the Paper Lifting Springs must be changed according to the paper size. (For details, see “DIS/REASSEMBLY” on page 6-19.)



6.4.1.6.3 Cassette-in-Position Detection

The machine detects that the cassette is slid into position as follows.

- The rib on the cassette frame presses the Cassette Set Switch located on the back panel of the machine, allowing the machine to detect that the cassette is slid in.



6.4.1.6.4 Paper Size Setting

(1) Cassette Paper Size Setting

- With the Fixed Paper Size Cassette, the paper size is set using the Tech. Rep. Choice function.

(2) Paper Sizes That Can be Set

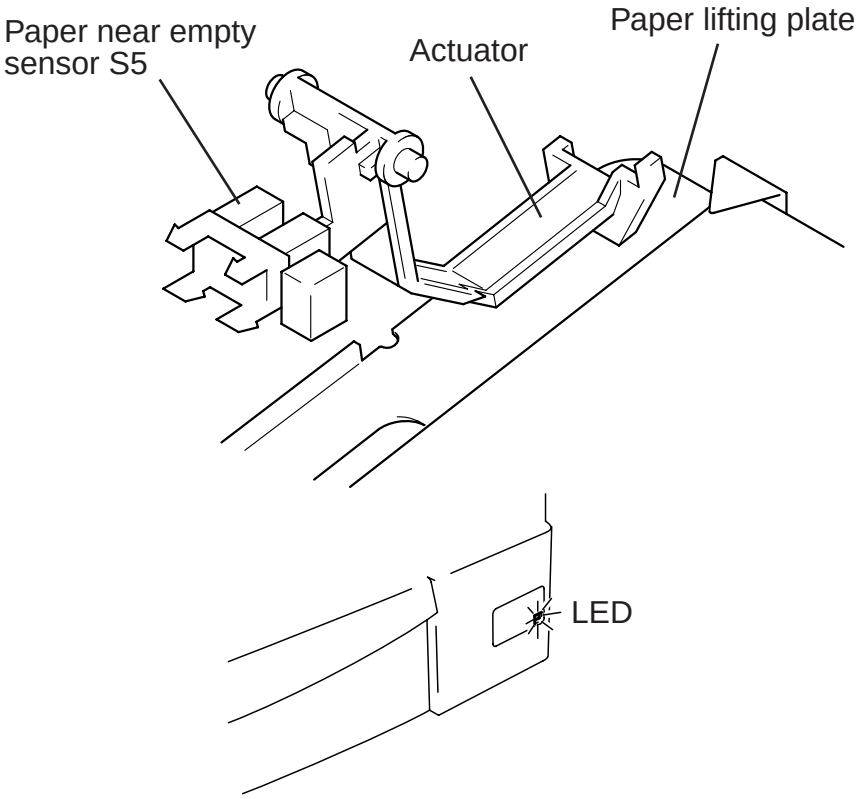
Paper Size Name	Inch Representation	CD × FD(mm)	
A3 L	—	297 × 420	❍
B4 L	—	257 × 364	❍
A4 L	—	210 × 297	❍
A4 C	—	297 × 210	❍
B5 L	—	182 × 257	●
B5 C	—	257 × 182	●
A5 C		210 × 148	—
ISO B5 L		176 × 250	●
ISO B5 C		250 × 176	●
F4 L		210 × 330	❍
Ledger L	11″×17″	279 × 432	❍
Legal L	8.5″×14″	216 × 356	❍
G. Legal L	8.5″×13″	216 × 330	●
Letter L	8.5″×11″	216 × 279	❍
Letter C	11″×8.5″	279 × 216	❍
G. Letter L	8″×10.5″	203 × 267	●
G. Letter C	10.5″×8″	267 × 203	●
Invoice C	8.5″×5.5″	216 × 140	—
Executive L	7.25″×10.5″	184 × 260	●
Executive C	10.5″×7.25″	260 × 184	●
Special size	—	297 × 430	●
	—	280 × 420	●
	—	220 × 330	●
	—	216 × 297	●
	—	297 × 216	●
	—	220 × 280	●
	—	280 × 220	●
	11″×14″ L	279 × 356	●
	9.25″×14″ L	236 × 356	●
	8.25″×11.75″ L	210 × 301	●
	8″×13″ L	203 × 330	●

❍ : Paper size setting (panel input) ● : Not supported by machine

*L: Lengthwise; C: Crosswise)

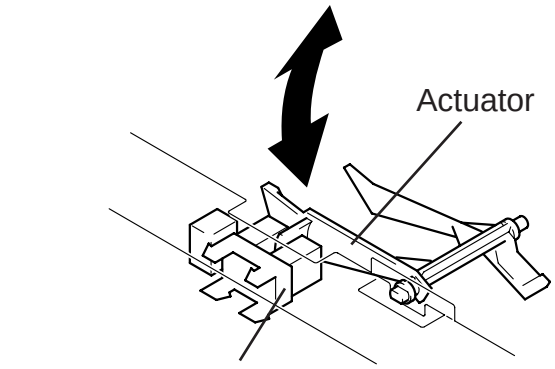
6.4.1.6.5 Paper Near Empty Detection

- A paper-near-empty condition is detected through the detection of the height of the Paper Lifting Plate.
- As the paper stack is consumed during a copy cycle, the Paper Lifting Plate of the cassette is gradually raised by the tension of the Paper Lifting Springs. When the Paper Near Empty Sensor is then unblocked, the machine determines that it is a paper-near-empty condition (the number of sheets of paper (80 g/m^2) still available for use: 50 ±30). The LED then starts blinking.
- Since the amount of paper still available for use varies while a paper take-up sequence is in progress, detection is made at a timing when the Paper Take-Up Roll is in the retracted position.



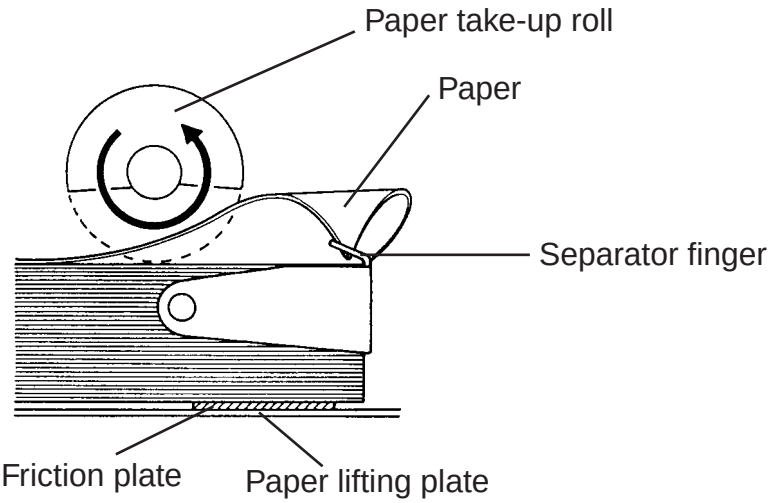
6.4.1.6.6 Paper Empty Detection

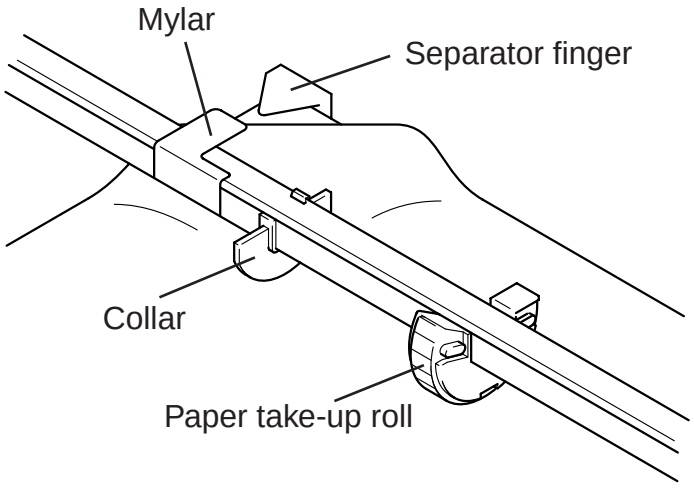
- When the cassette runs out of paper, the actuator for the Paper Empty Sensor drops into the cutout in the Paper Lifting Plate. This unblocks the sensor and the machine detects that the cassette has run out of paper.
- When a paper-empty condition is detected, the blinking LED lights up steadily.
- As noted earlier, the Paper Lifting Plate is raised at all times by the tension of the Paper Lifting Springs. This causes the actuator for the Paper Empty Sensor to tend to be caught by the paper stack when the cassette is slid out of the machine. To prevent this, the actuator is slightly tilted. This, however, presents another problem of a smaller operating stroke of the actuator, which in turn increases the possibility of the actuator activating the sensor by the flexing of a sheet of paper as it is taken up and fed in. To prevent this false detection of a paper-empty condition, the paper empty detection is enabled only when the Paper Take-Up Roll is in the retracted position.



6.4.1.6.7 Paper Separating Mechanism

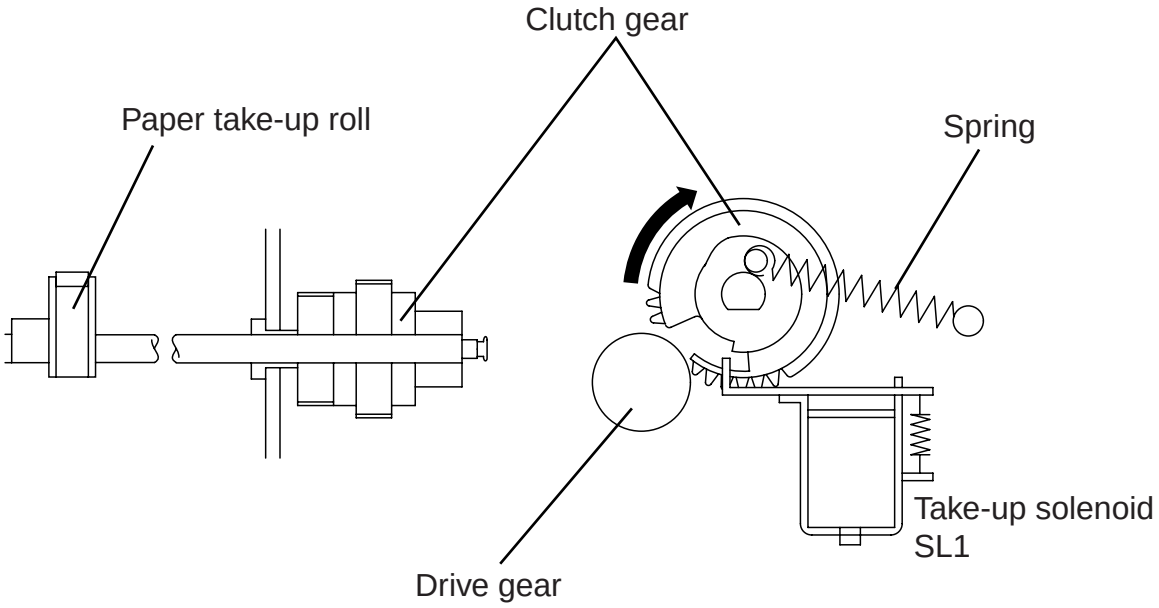
- Each cassette has fingers that function to separate the top sheet of paper from the rest of the paper stack at paper take-up. The fingers are fitted to the right front and rear corners of the cassette. When the Paper Take-Up Roll starts turning to take up the top sheet of paper, its turning force is directly transmitted to the top sheet of paper as it is in direct contact with the Paper Take-Up Roll. That force overcomes the block of the fingers, causing the top sheet of paper to ride over the fingers and be fed out of the cassette into the machine.
- The collars and mylars placed on both sides of the Paper Take-Up Roll restrict the length of the loops that form in the paper at the fingers, helping the paper edges to easily slip out of the fingers.
- As to the second sheet of paper, the paper transport force obtained through friction with the top sheet of paper is weak and does not allow the second sheet of paper to ride over the block of the fingers. Hence, the second sheet of paper remains stationary with the rest of the paper stack in the cassette.
- When there are only two sheets of paper left in the cassette, the bottom sheet can be fed with the top one if the friction of the Paper Lifting Plate is weak. The Friction Plate affixed to the Paper Lifting Plate prevents this from happening.



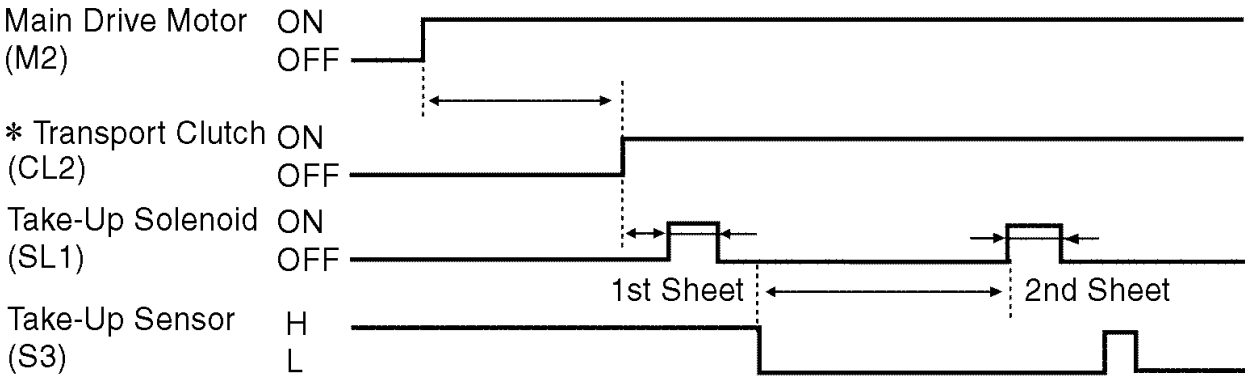


6.4.1.6.8 Paper Take-Up Roll

- Since the Paper Lifting Plate is raised at all times by the Paper Lifting Springs, paper is wedged in the mechanism when the cassette is slid out of the machine if the Paper Take-Up Roll is round in shape. So the roll is semicircular and the circular part of the roll is positioned on top at times other than take-up. For the purpose of explanation, we call this position of the Paper Take-Up Roll the “retracted” position.
- The Paper Take-Up Roll is grooved to keep good friction under heavy loading.
- In each of the Fixed Paper Size Cassette and Universal Cassette, there are two Paper Take-Up Rolls mounted.
- When the Take-Up Solenoid is energized, it causes the spring tension to bring the drive gear into mesh with the clutch gear. This results in the drive being transmitted to the Paper Take-Up Rolls.



Timing Chart (A4 crosswise, two sheets)

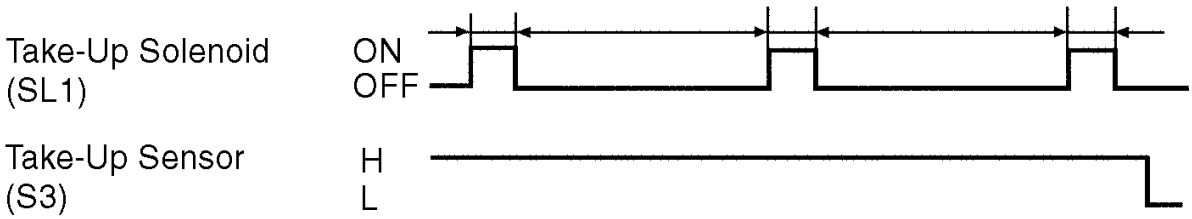


* Transport Clutch CL2 may be deenergized temporarily (for temporary stop motion).

6.4.1.6.9 Paper Take-Up Retry Control

To minimize the occurrence of paper misfeed due to a slippery Paper Take-Up Roll, the Take-Up Solenoid is energized a second time if a sheet of paper fails to reach the Take-Up Sensor within a given period of time after it has been deenergized.
The control timing is as follows.

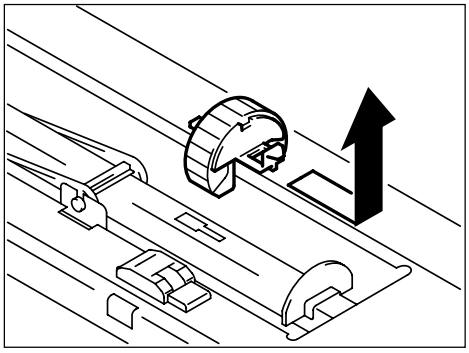
A misfeed results if the sheet of paper does not reach the Take-Up Sensor even after three paper take-up sequences.



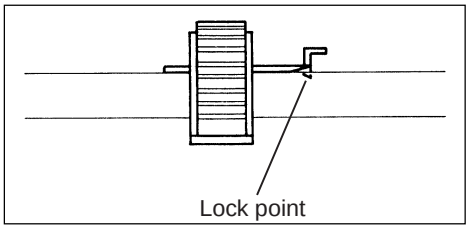
6.4.2 DIS/REASSEMBLE, ADJUSTMENT

6.4.2.1 Disassembly

6.4.2.1.1 Removal of the Paper Take-Up Rolls

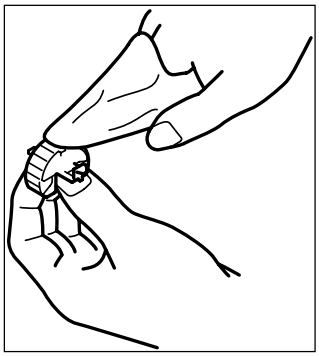


1. Remove the upper cassette.
2. Unlock the Paper Take-Up Roll and slide it off its shaft.



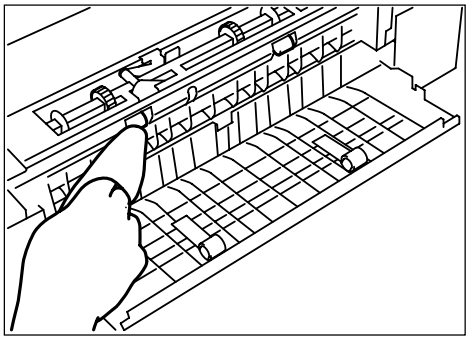
Note: When installing the roll, make sure it securely locks into place as illustrated.

6.4.2.1.2 Cleaning of the Paper Take-Up Rolls



Wipe the surface of the Paper Take-Up Rolls clean with a soft cloth dampened with alcohol.

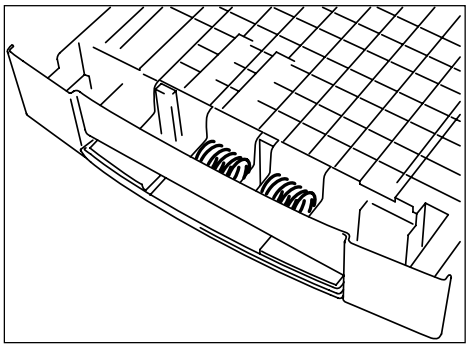
6.4.2.1.3 Cleaning of the Vertical Transport Roller/Rolls

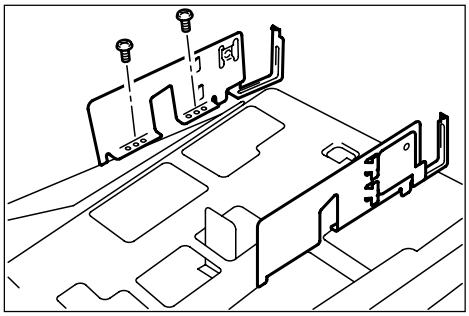


Wipe the surface of the Vertical Transport Roller/Rolls clean with a soft cloth dampened with alcohol.

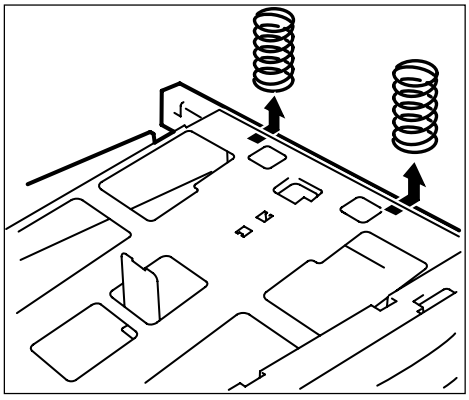
6.4.2.1.4 Replacement of the Paper Lifting Springs

The replacement springs are housed on the bottom of the cassette.

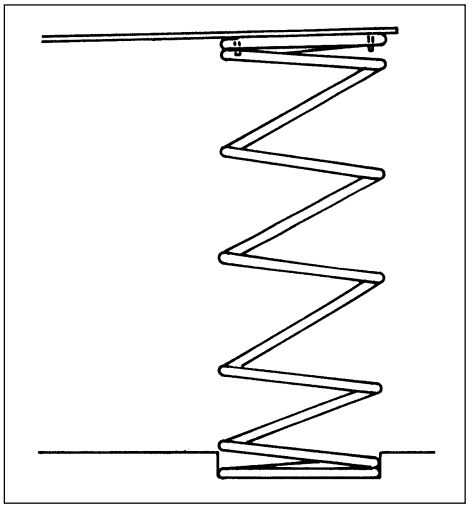




1. Remove the cassette.
2. Remove the two Edge Guide Assemblies (two screws each).



3. Replace the springs. (See ADJUSTMENT.)



Note: When installing the springs, make sure both ends of the spring are properly secured as illustrated.

6.4.3 ADJUSTMENT

6.4.3.1 Paper Lifting Spring Adjustment

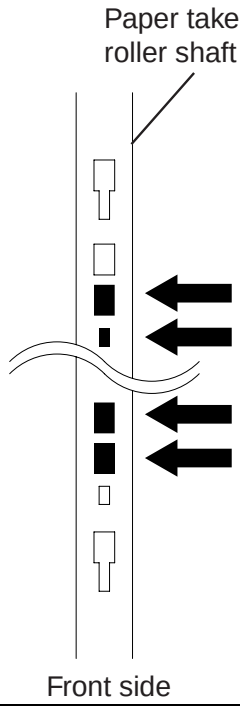
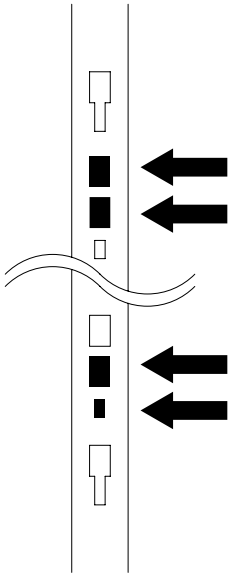
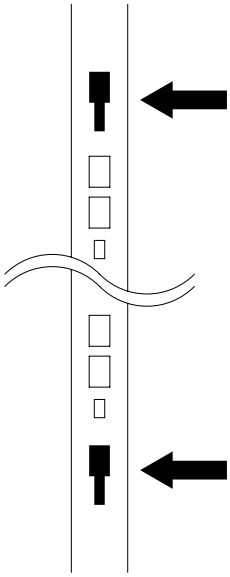
Whenever the paper size has been changed, replace the Paper Lifting Springs by following the table given below. (For the replacement procedure, see “6.4.2 DISASSEMBLY”.)
The replacement springs are housed on the bottom of the cassette.

Paper Size Name	CD × FD (mm)	Spring
A3 L	297 × 420	A
B4 L	257 × 364	A
A4 L	210 × 297	B
A4 C	297 × 210	B
B5 L	182 × 257	—
B5 C	257 × 182	—
F4 L	210 × 330	B
11×17 L	279 × 432	A
Legal L	216 × 356	B
Letter L	216 × 279	B
Letter C	279 × 216	B
Executive L	184 × 267	—
Executive C	267 × 184	—

L: Lengthwise; C: Crosswise
Spring A : Silver
Spring B : Black
Spring — : Not supported

6.4.3.2 Paper Take-Up Rolls Adjustment

Whenever the paper size has been changed, change the Paper Take-Up Rolls position by following the table given below. (For the removing procedure, see DISASSEMBLY.)

B5L, Executive L	A4L, Letter L, Legal L,	B4L, A4C, A3L, Letter C, F4L, 11×17
		

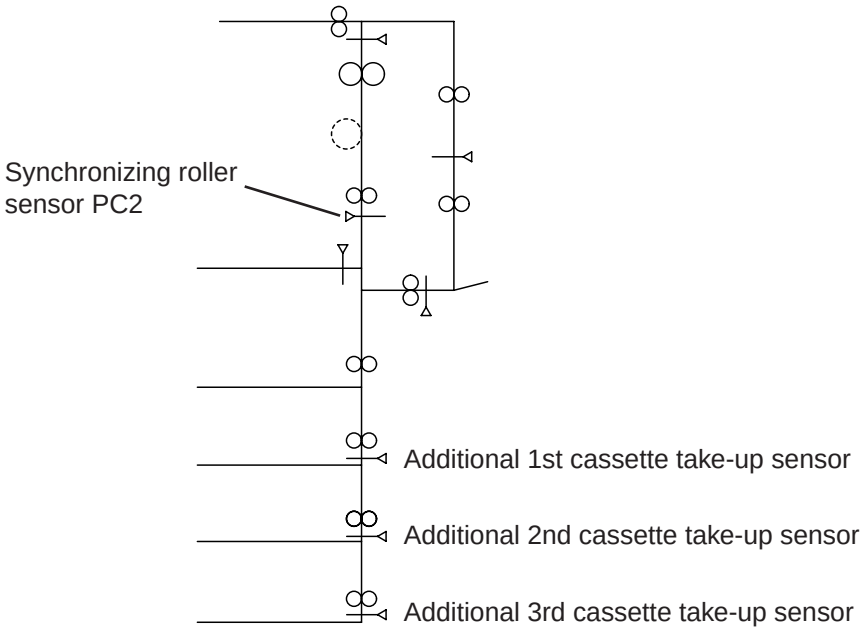
6.4.3.3 Registration Adjustment (Printer)

See “5.3.1 Printer Registration (top)” on page 5-81 and “5.3.2 Printer Registration (side)” on page 5-82.

6.4.4 MISFEED DETECTION

6.4.4.1 Misfeed detection

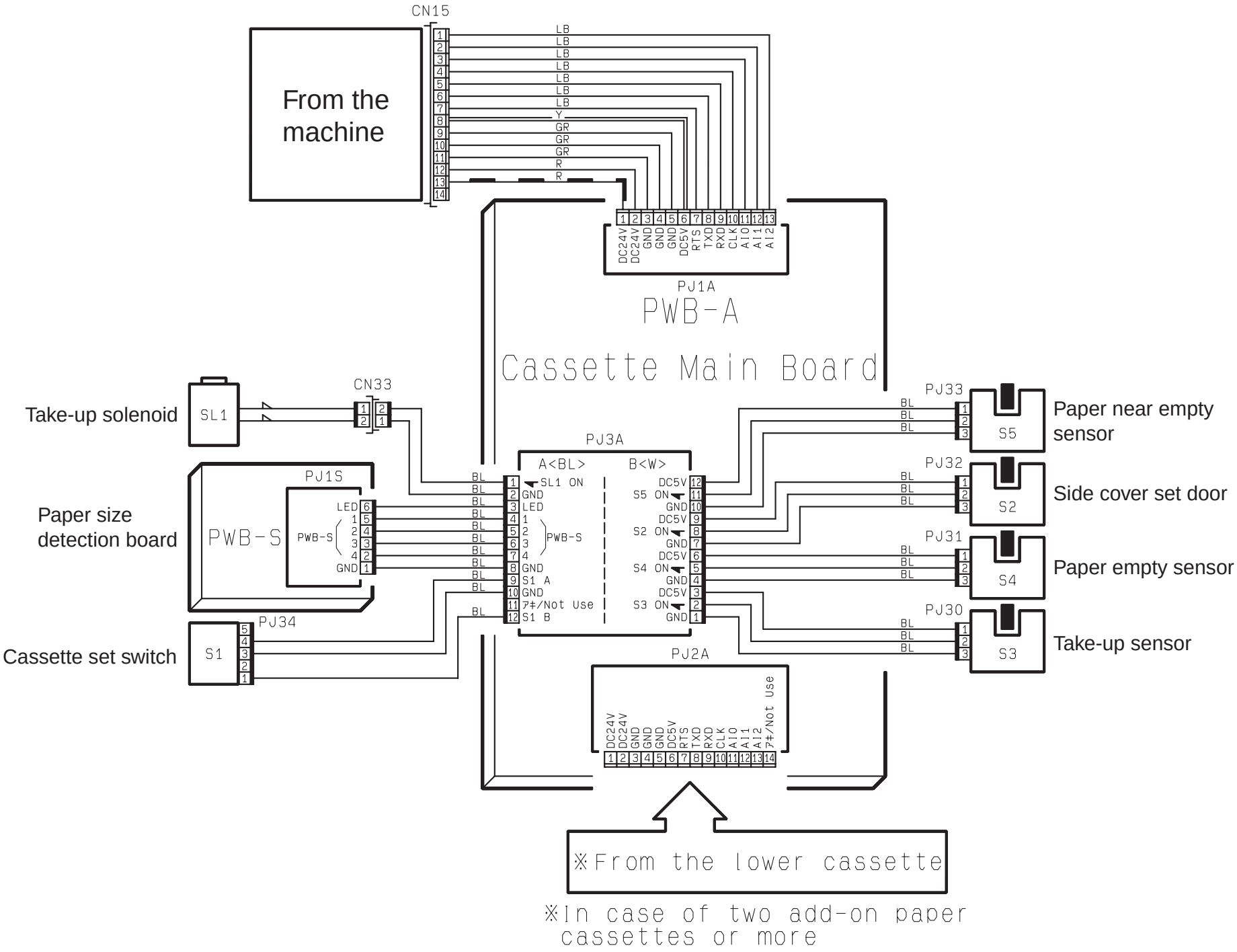
6.4.4.1.1 Misfeed Detecting Sensors Layout


Synchronizing roller sensor PC2
Additional 1st cassette take-up sensor
Additional 2nd cassette take-up sensor
Additional 3rd cassette take-up sensor

6.4.4.1.2 Types of Misfeed and Misfeed Detection Timings

Type	Detection Timing
Paper left in path	The output from Take-Up Sensor S3 is blocked (L) when the machine Power Switch is turned ON or a misfeed is reset.
Detection of paper stopped at Take-Up Sensor	• Additional 1st to 3rd cassette The period of time is counted during which Take-Up Sensor S3 remains blocked (L). The detection result is equivalent to +260 mm longer than the recognized paper length.
Paper take-up failure detection	• Additional 1st to 3rd cassette Take-Up Sensor S3 is not blocked (L) within a given period of time after Take-Up Solenoid SL1 has been energized (after two paper take-up retry sequences).

Type	Detection Timing
Vertical transport paper leading edge detection	• Additional 1st cassette Synchronizing Roller Sensor PC2 is not unblocked (H) within a given period of time after Take-Up Sensor S3 of the Additional 1st drawer has been blocked (L). • Additional 2nd cassette 1. Take-Up Sensor S3 of the additional 1st drawer is not blocked (L) within a given period of time after Take-Up Sensor S3 of the 2nd drawer has been blocked (L). 2. PC2 is not unblocked (H) within a given period of time after S3 of the additional 1st drawer has been blocked (L). • Additional 3rd cassette 1. Take-Up Sensor S3 of the additional 2nd drawer is not blocked (L) within a given period of time after Take-Up Sensor S3 of the 3rd drawer has been blocked (L). 2. S3 of the additional 1st drawer is not blocked within a given period of time after S3 of the additional 2nd drawer has been blocked (L). 3. PC2 is not unblocked within a given period of time after S3 of the additional 1st drawer has been blocked (L).
Size error detection * The detection described on the right is also made during a 2-sided copy cycle.	• Additional 1st to 3rd cassette The period of time is counted from when Take-Up Sensor S3 is blocked (L) to when it is unblocked (H). The difference between the detected length and the paper size which has been recognized is more than ±20 mm.


From the machine
CN15
LB
LB
LB
LB
LB
LB
LB
Y
GR
GR
GR
R
R
DC24V
DC24V
GND
GND
GND
DC5V
RTS
TXD
RXD
CLK
A10
A11
A12
PJ1A
PWB-A
Cassette Main Board
Take-up solenoid
SL1
CN33
PJ3A
A<BL>
B<W>
SL1 ON
GND
LED
1
2
3
4
GND
S1 A
GND
ｱ#/Not Use
S1 B
DC5V
S5 ON
S2 ON
S4 ON
S3 ON
PJ1S
PWB-S
Paper size detection board
PJ34
S1
Cassette set switch
PJ33
S5
Paper near empty sensor
PJ32
S2
Side cover set door
PJ31
S4
Paper empty sensor
PJ30
S3
Take-up sensor
PJ2A
※From the lower cassette
※In case of two add-on paper cassettes or more

6.5 Large Capacity Cassette

6.5 Large Capacity Cassette 6-25
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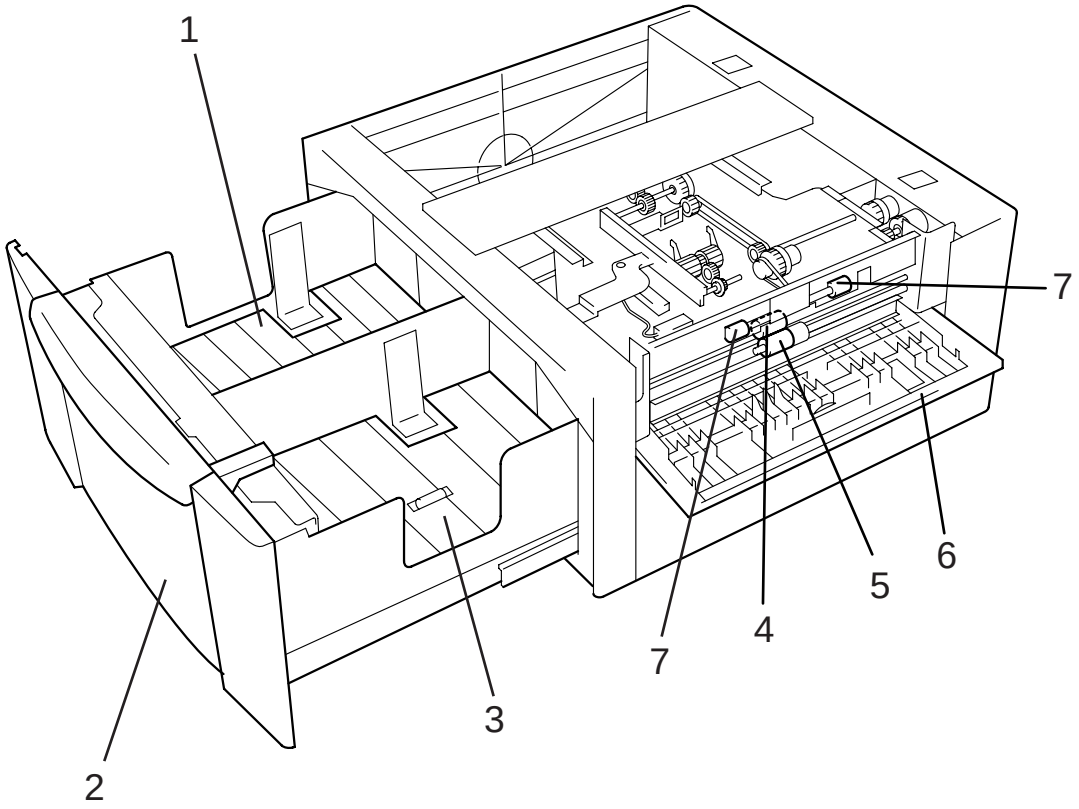
6.5.1 GENERAL, MECHANICAL/ELECTRICAL

6.5.1.1 Specifications

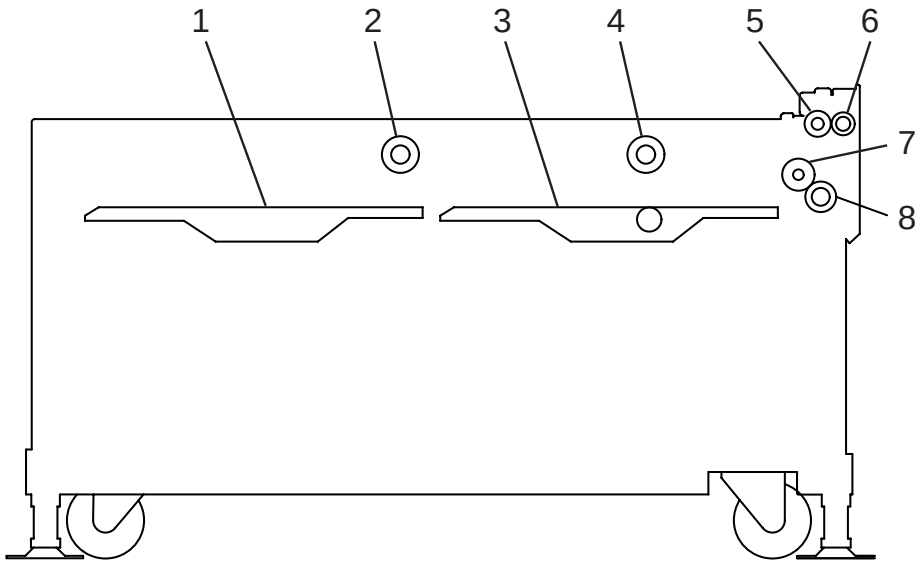
Type	:	Front Loading Type LCC
Type of Paper	:	Plain paper (60 to 90 g/m² or 16 to 24 lbs.), recycled paper (60 to 90 g/m² or 16 to 24 lbs.)
Paper Size	:	A4C, B5C, Letter C (L: Lengthwise; C: Crosswise)
Registration	:	Center
Paper Capacity	:	2500 sheets (1250 × 2)
Power Requirements	:	DC24V ±10%, DC5V ±10% (supplied from main unit)
Power Consumption	:	45W (If Paper Dehumidifying Heaters are installed, Total: 75W.)
Dimensions	:	535 (W) × 544.7 (D) × 284 (H) mm or 21 (W) × 21.5” (D) × 11.25” (H) inches
Weight	:	16.7 kg or 36.75 lbs.
Environmental Requirements	:	Same as machine

6.5.1.2 Part Identification



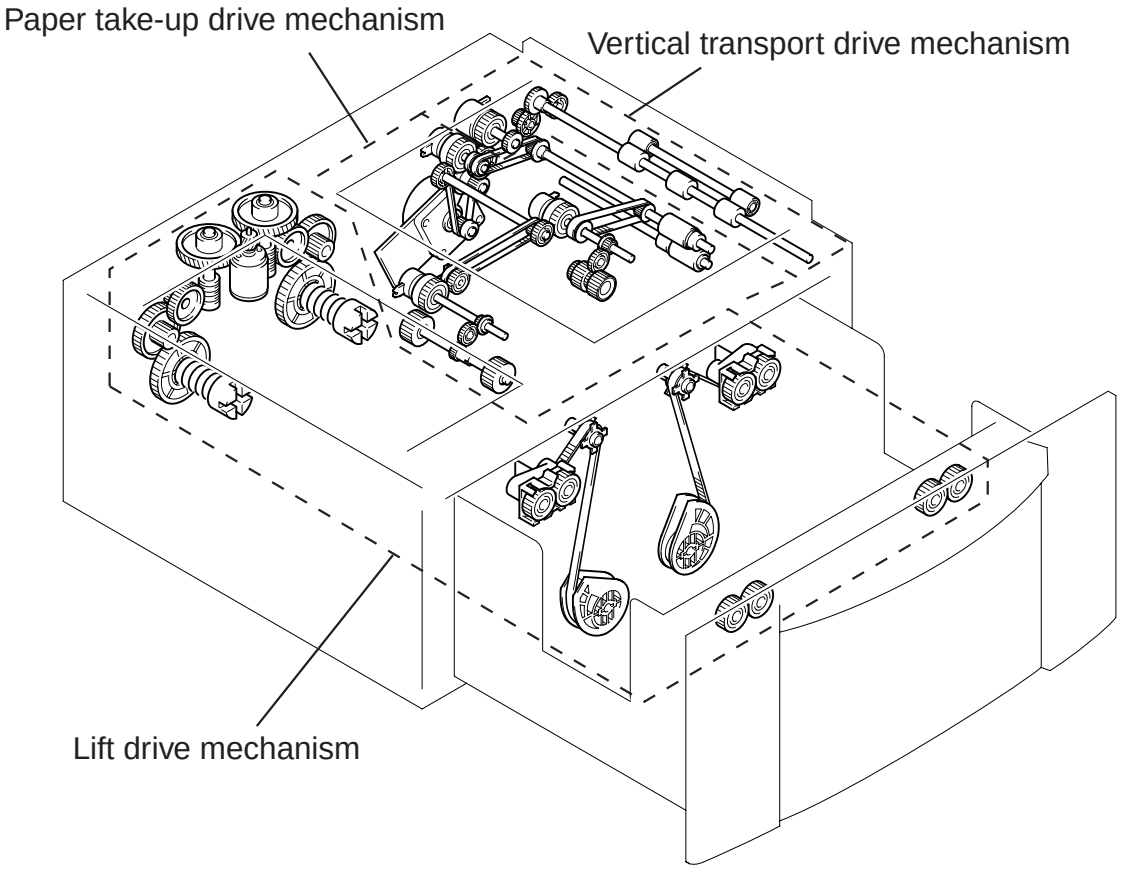
1. Lift 2
2. Front Cover
3. Lift 1
4. Feed Roll
5. Separator Roll
6. Side Cover
7. Vertical Transport Rolls

6.5.1.3 Cross-Sectional View

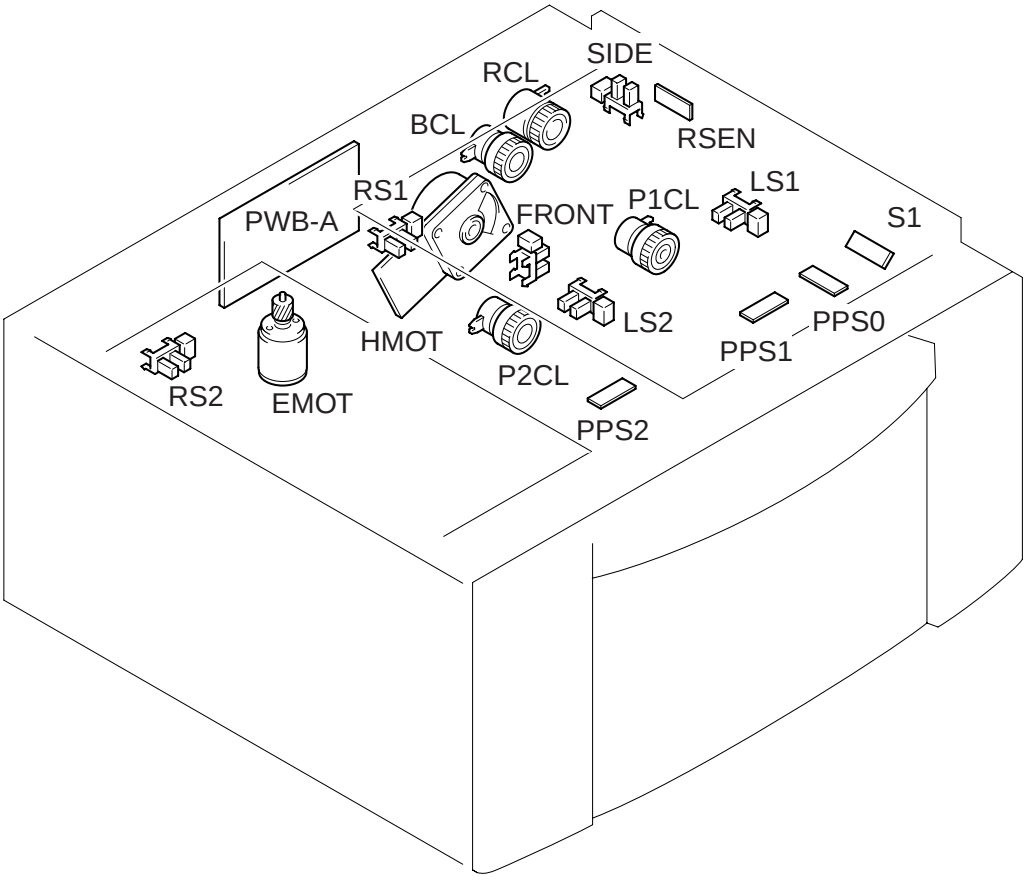


1. Lift 2
2. Paper Take-Up Roll 2
3. Lift 1
4. Paper Take-Up Roll 1
5. Vertical Transport Roller
6. Vertical Transport Roll
7. Feed Roll
8. Separator Roll

6.5.1.4 Drive System



6.5.1.5 Electrical Components Layout



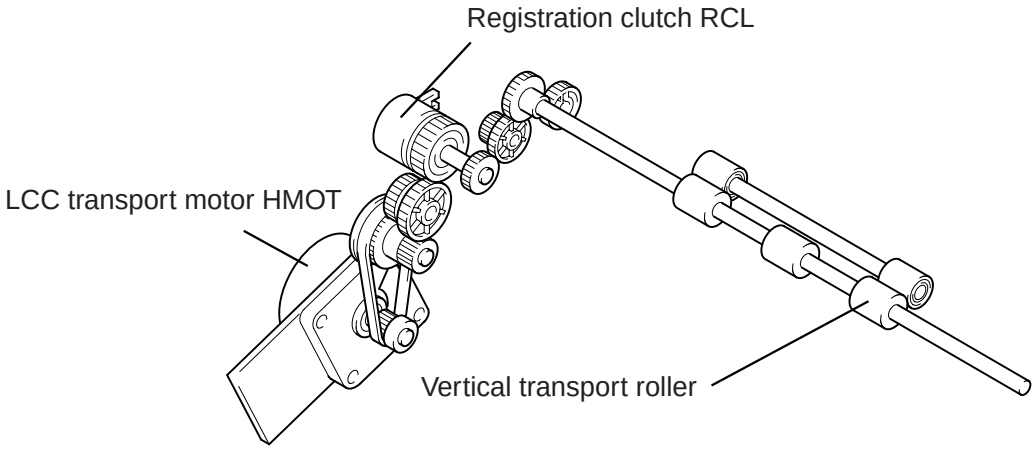
Symbol	Name	Symbol	Name
PWB-A	LCC Main Board	PPS2	Paper Empty Sensor 2
HMOT	LCC Transport Motor	RSEN	Registration Sensor
EMOT	LCC Lift-Up Motor	S1	Paper Standby Position Sensor
P1CL	Take-Up Clutch 1	SIDE	Side Cover Set Sensor
P2CL	Take-Up Clutch 2	FRONT	LCC Set Sensor
BCL	Separator Clutch	RS1	Paper Near Empty Sensor 1
RCL	Registration Clutch	RS2	Paper Near Empty Sensor 2
PPS0	LCC Take-Up Sensor	LS1	Lift-Up Sensor 1
PPS1	Paper Empty Sensor 1	LS2	Lift-Up Sensor 2

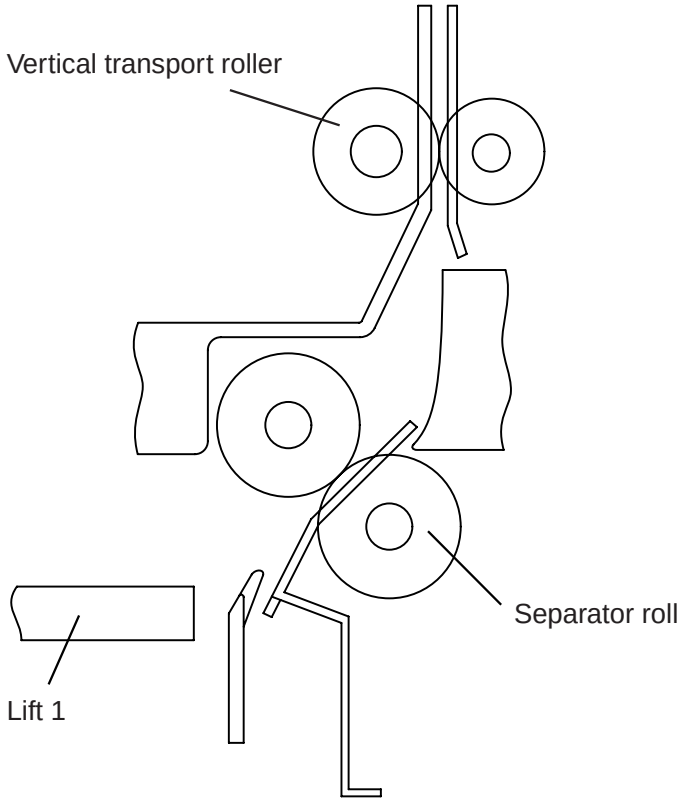
6.5.1.6 Mechanical Operations

6.5.1.6.1 Vertical Transport Drive Mechanism

1. Vertical Transport Drive Operation

- The Vertical Transport Roller is driven by LCC Transport Motor HMOT.
- The driving force of HMOT is transmitted via a gear train and Registration Clutch RCL to the Vertical Transport Roller which feeds the paper from Lift 1 or 2 to the machine.
- Because of the long paper path from Lift 2 involved, skew tends to occur in the paper fed from Lift 2. Registration Clutch RCL forms a loop in the paper between the Separator Roll and Vertical Transport Roller, thereby correcting the skew.



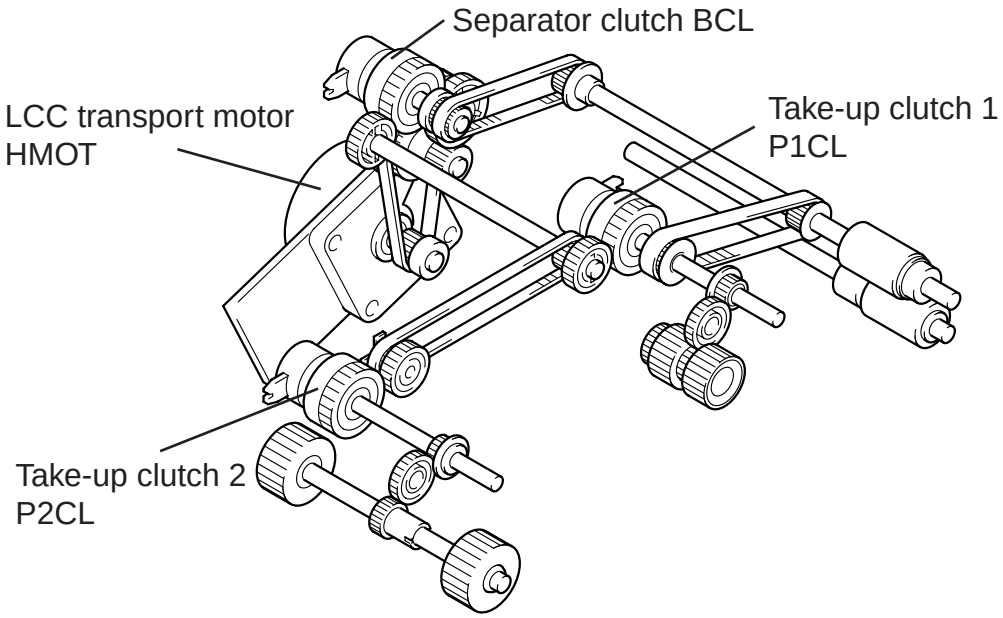


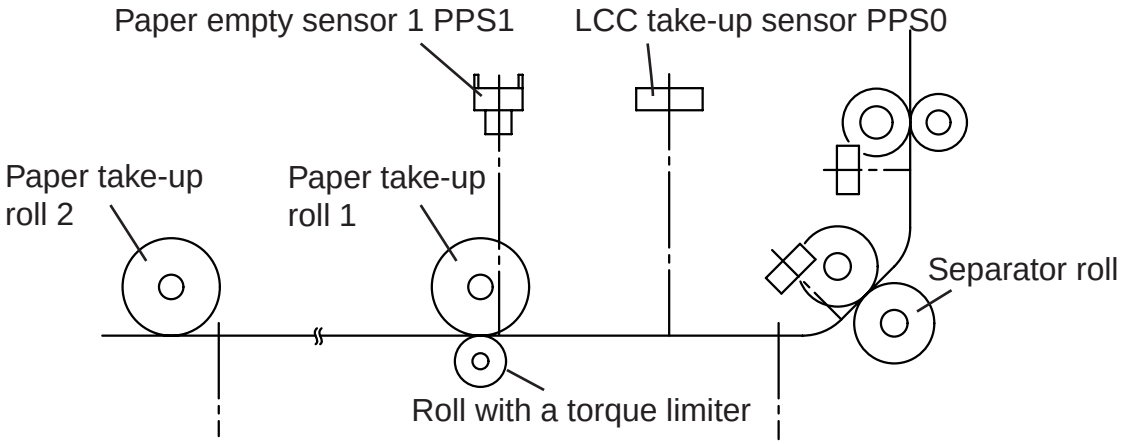
2. Control of LCC Transport Motor HMOT

A DC motor is used as HMOT which is energized and deenergized by the output signals fed through pins 7 to 10 and 12 of CN6 by way of LCC Main Board PWB-A by the Master Board of the machine.

6.5.1.6.2 Paper Take-Up Mechanism

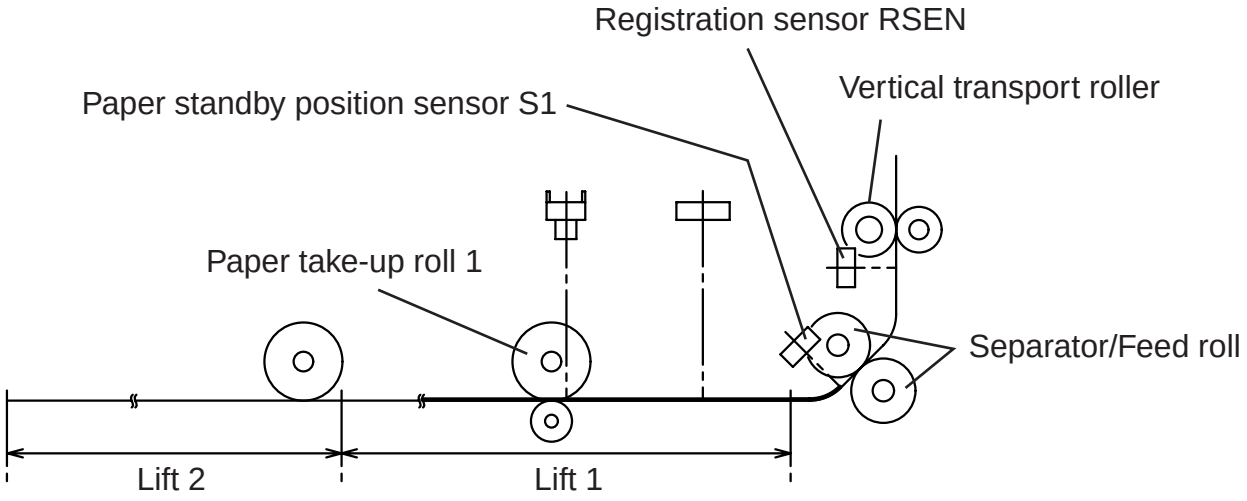
- The paper take-up mechanism takes up a sheet of paper from the paper stack on each lift and feeds it to the Vertical Transport Roller.
- A paper take-up sequence is performed when drive from LCC Transport Motor HMOT is transmitted via Take-Up Clutch 1/2 P1CL/P2CL to Paper Take-Up Roll 1/2. When Lift 1 runs out of paper, paper is then fed from Lift 2.
- Mounted beneath Paper Take-Up Roll 1 of Lift 1 is a roll with a torque limiter that prevents a double feed of the last two sheets of paper.
- Paper Take-Up Roll 1 is active when paper is fed from Lift 1.
- When paper is fed from Lift 2, both Paper Take-Up Roll 1 and 2 are active to perform the paper take-up sequence. In that case, Paper Empty Sensor 1 PPS1 detects that a sheet of paper has been properly fed through Paper Take-Up Roll 1.
- The sheet of paper taken up from Lift 1/2 is temporarily stopped at the Paper Standby Position Sensor to minimize variations in the position of the leading edge of the paper.
  When drive is transmitted by Separator Clutch BCL to the Separator Roll, the sheet of paper is then transported to the Vertical Transport Section.



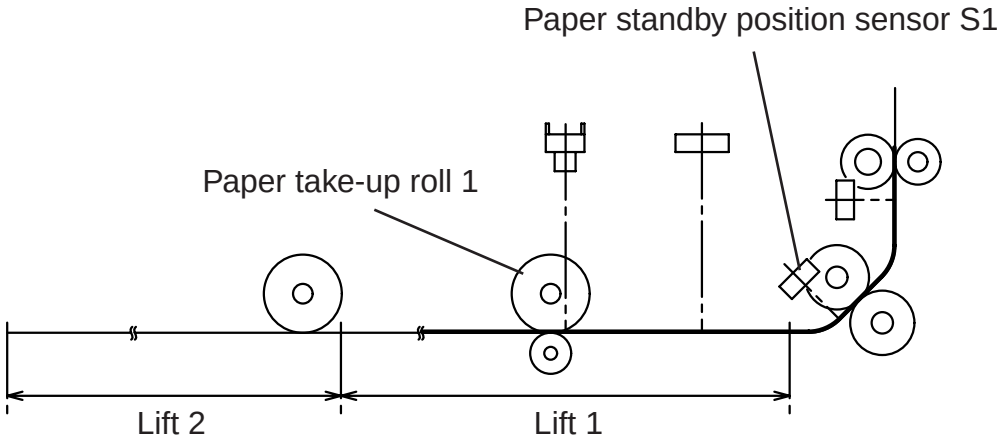


1. Paper take-up from Lift 1

A. After Lift 1 has completed its lifting motion, Paper Take-Up Roll 1 is driven to take up and feed a sheet of paper until the paper blocks Paper Standby Position Sensor S1.
This serves as the standby position of the paper.

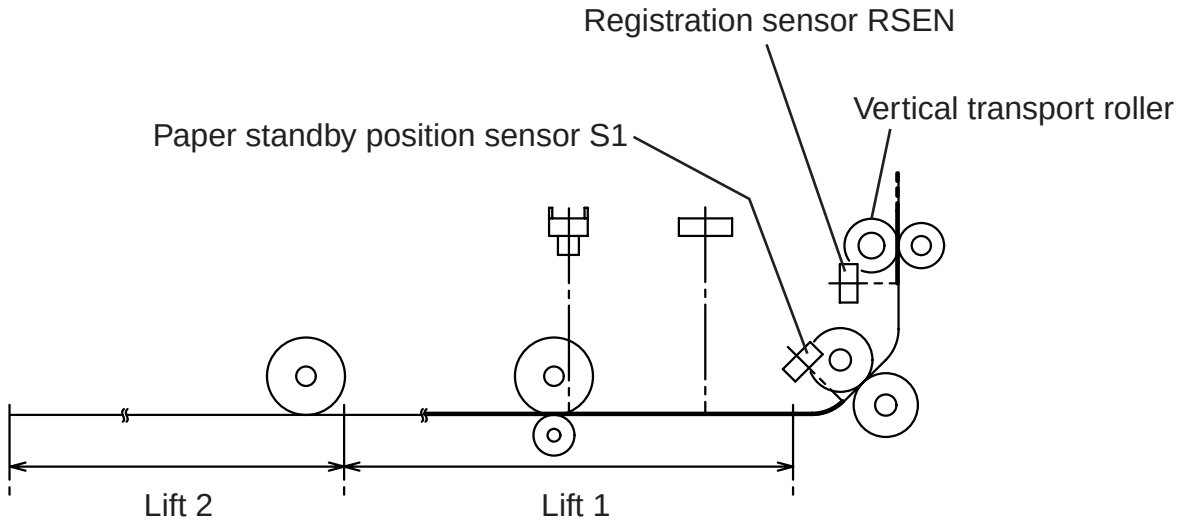


B. When a Paper Take-Up signal is received from the machine, the Separator/Feed Rolls and Paper Take-Up Roll 1 are driven to transport the paper up to Registration Sensor RSEN. After RSEN has been blocked, the paper is transported a little further to reach the Vertical Transport Roller, plus form a registration loop, before being brought to a stop.

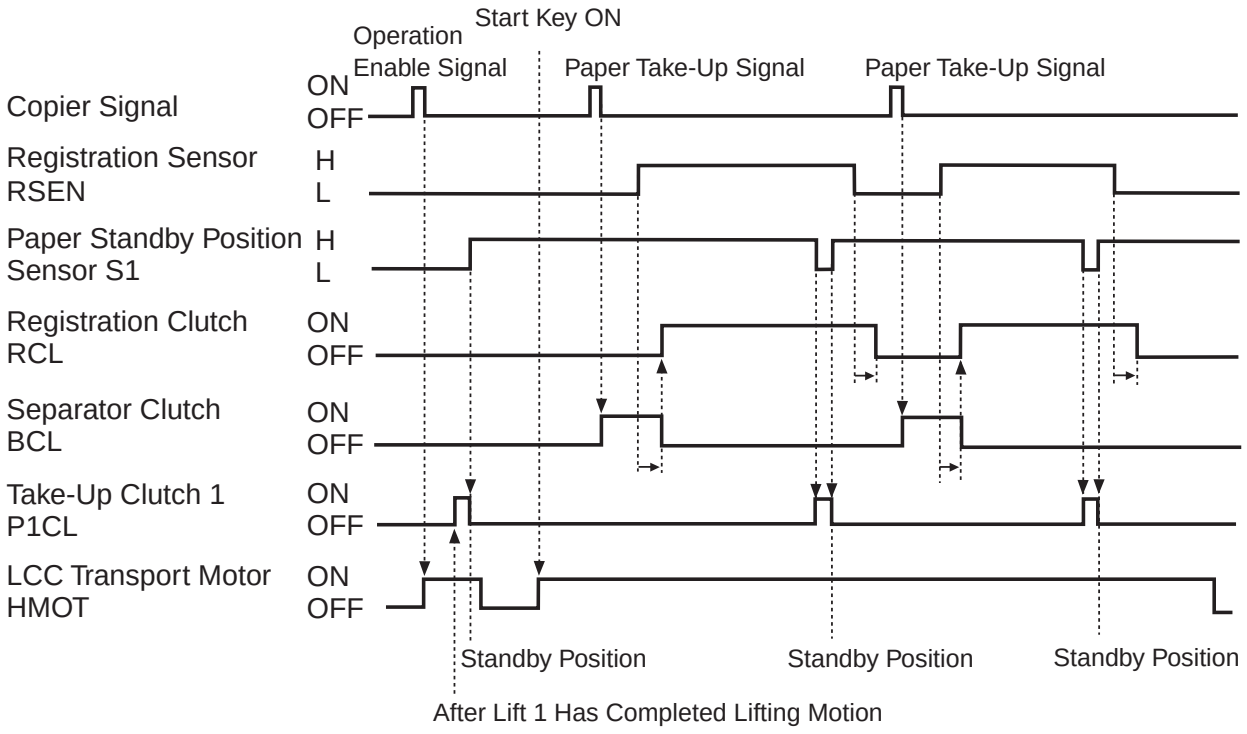


C. The Vertical Transport Roller is driven to transport the paper to the machine. When the trailing edge of the paper being transported by the Vertical Transport Roller unblocks Paper Standby Position Sensor S1, the subsequent sheet of paper is transported to the standby position and the LCC waits for the next Paper Take-Up signal to be received.

D. Registration Clutch RCL is deenergized a given period of time after the trailing edge of the paper being taken up has unblocked Registration Sensor RSEN. The next Paper Take-Up signal is transmitted after the timer, which is started as the Vertical Transport Roller starts moving for the preceding sheet of paper, has run out.



E. The steps B to D are repeated to transport paper from Lift 1.
Taking up and feeding two sheets of paper from Lift 1

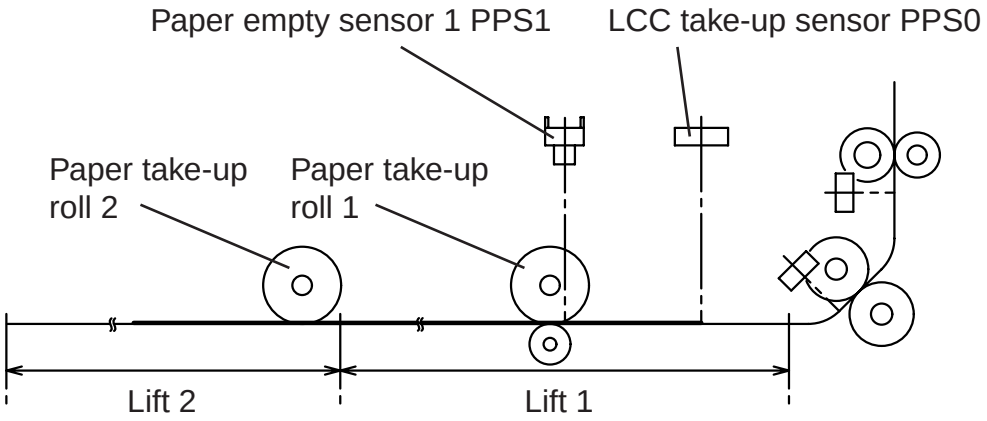


2. Paper take-up from Lift 2

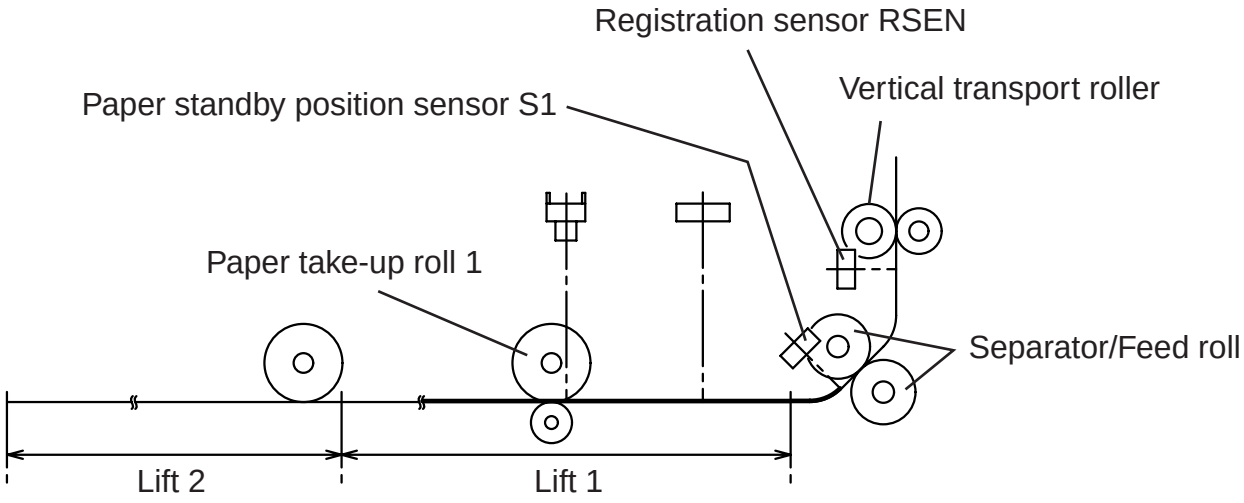
A. When all sheets of paper have been taken up and fed in from Lift 1, Lift 1 is placed in the top level position to serve as part of the paper path for paper feeding from Lift 2.

B. When the trailing edge of the last sheet of paper from Lift 1 unblocks Paper Empty Sen-sor 1 PPS1, both Paper Take-Up Roll 1 and 2 start turning.

C. The sheet of paper is transported by driving both Paper Take-Up Roll 1 and 2 up to a point at which LCC Take-Up Sensor PPS0 is blocked.

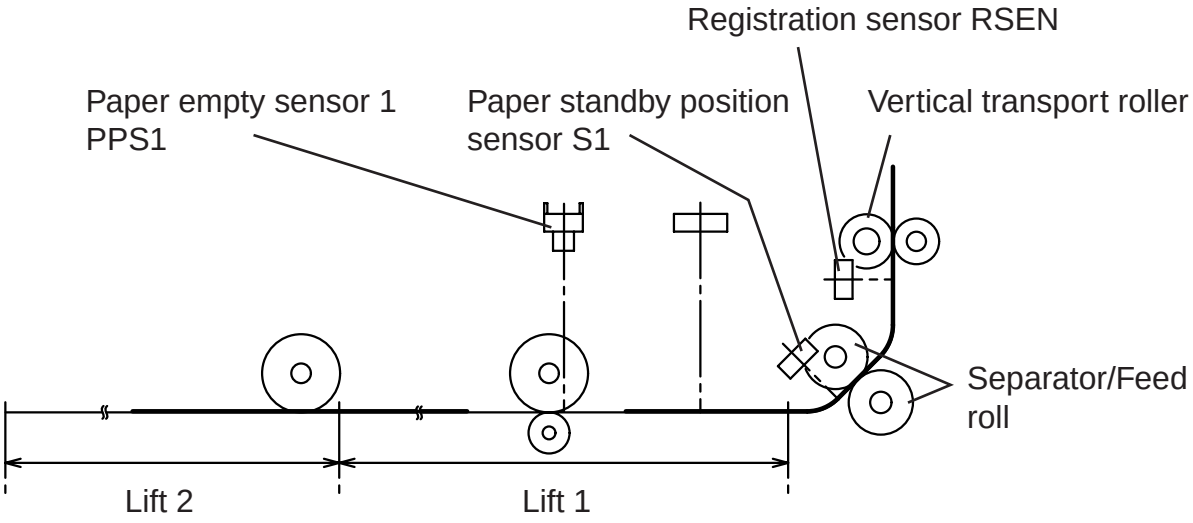


D. Paper Take-Up Roll 1 is driven to transport the paper located at PPS0 up to a point at which Paper Standby Position Sensor S1 is blocked. This serves as the standby posi-tion of the paper.



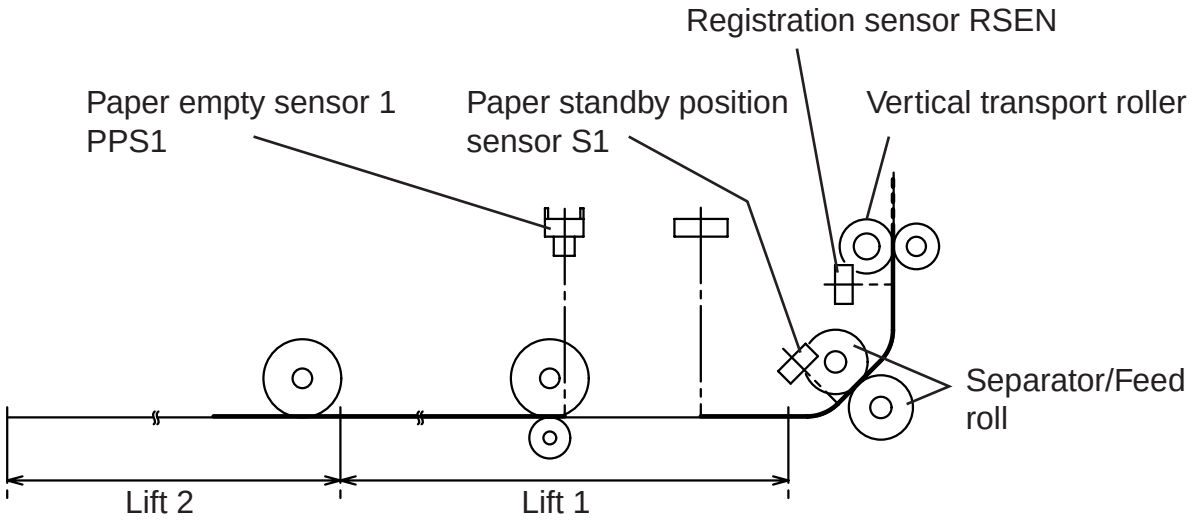
E. When a Paper Take-Up signal is received from the machine, the Separator/Feed Rolls and Paper Take-Up Roll 1 are driven to transport the paper up to Registration Sensor RSEN. After RSEN has been blocked, the paper is transported a little further to reach the Vertical Transport Roller, plus form a registration loop, before being brought to a stop.

F. The Vertical Transport Roller is driven to transport the paper to the machine. When the trailing edge of the paper being transported by the Vertical Transport Roller unblocks Paper Empty Sensor 1 PPS1, Paper Take-Up Roll 1 and 2 are driven to transport the subsequent sheet of paper to a position at which PPS1 is blocked.



G. A given period of time after the trailing edge of the preceding sheet of paper has unblocked LCC Take-Up Sensor PPS0, the subsequent sheet of paper located at PPS1 is transported to the standby position. LCC then waits for the next Paper Take-Up signal to be received.

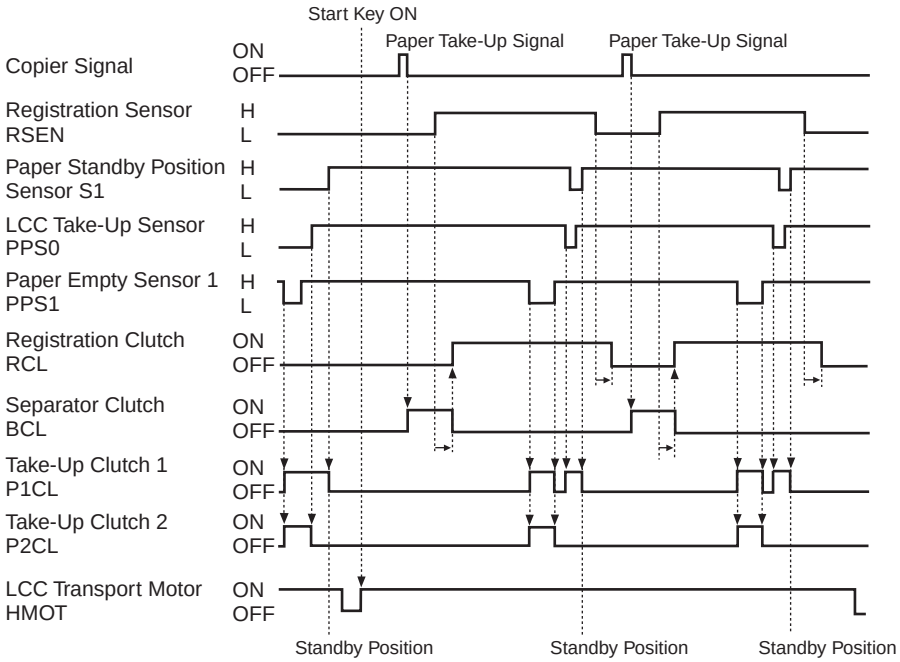
If no paper is present at the point at which the trailing edge of the preceding sheet of paper is supposed to block S1 when the subsequent sheet of paper blocks PPS1, the subsequent sheet of paper is transported to the standby position without being stopped and the LCC waits for the next Paper Take-Up signal.



H. Registration Clutch RCL is deenergized a given period of time after the trailing edge of the paper being taken up has unblocked Registration Sensor RSEN. The next Paper Take-Up signal is transmitted after the timer, which is started as the Vertical Transport Roller starts moving for the preceding sheet of paper, has run out.

I. The steps E to H are repeated to transport paper from Lift 2.

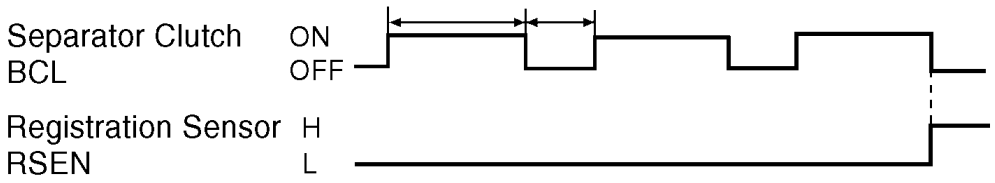
Taking up and feeding two sheets of paper from Lift 2



6.5.1.6.3 Paper Take-Up Retry Control

To minimize the occurrence of paper misfeed due to a slippery Paper Take-Up Roll, Separa-tor Clutch BCL is energized a second time if a sheet of paper fails to reach Registration Sensor RSEN within a given period of time after BCL has first been energized.
The control timing is as follows.

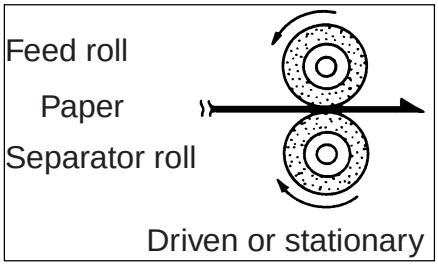
A paper misfeed results if the sheet of paper does not reach the Registration Sensor even after three paper take-up sequences.



6.5.1.6.4 Paper Separating Mechanism

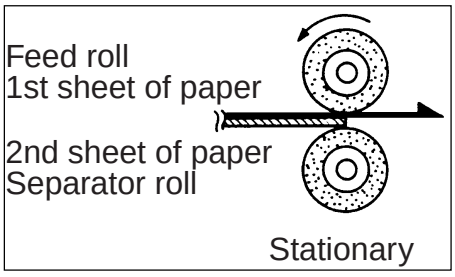
The paper separating mechanism employs a system with a torque limiter that is fitted to the Separator Roll shaft and stops the Separator Roll when there is a change in friction between the Feed and Separator Rolls.

<Normal Feeding>



When only one sheet of paper is fed, the friction coefficient on the top side of the paper is equal to
that on the underside. Driven by the Feed Roll, the paper drives the Separator Roll. This causes the paper to be sent to the Vertical Transport Section.
The friction coefficient varies for different ambient conditions and types of paper being used, which often causes the Separator Roll to be stationary.

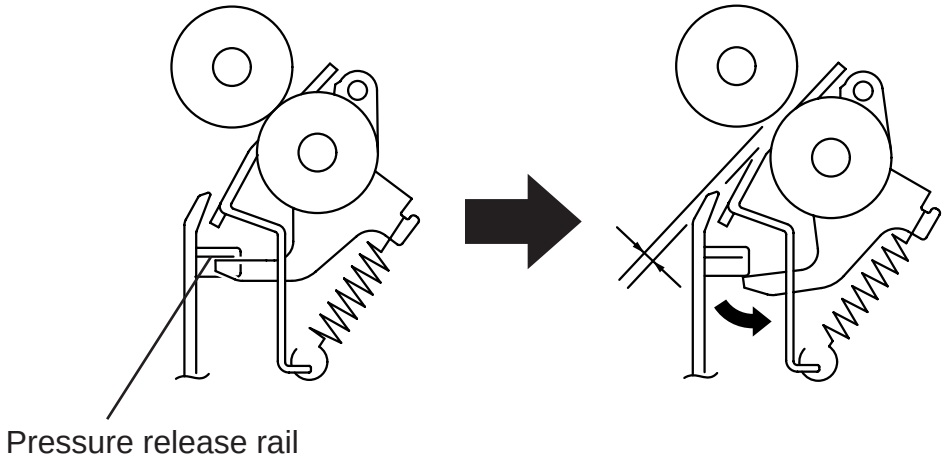
<Double Feeding>



Since the friction coefficient between the under-side of the second sheet of paper and Separator Roll is greater than that between the first and second sheets of paper, the Separator Roll is not driven and holds the second sheet of paper at the nip, allowing only the first sheet of paper to be fed to the Vertical Transport Section.

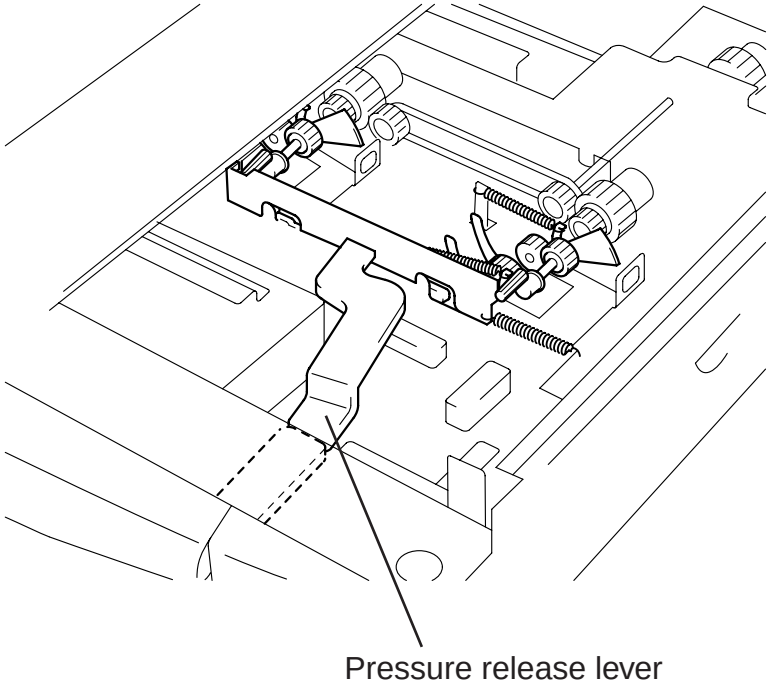
6.5.1.6.5 Paper Pressure Releasing Mechanism

- The LCC is provided with a mechanism that releases the pressure between the Feed and Separator Rolls and between the paper and Paper Take-Up Roll when the LCC is slid out of the machine.
- The pressure between the Feed and Separator Rolls is released by the Separator Roll Assy and the Pressure Release Rail above the rail on the paper take-up end. When LCC is pulled out, the Pressure Release Rail pushes the Separator Roll Assy downward, thus releasing the pressure between the Feed and Separator Roll.



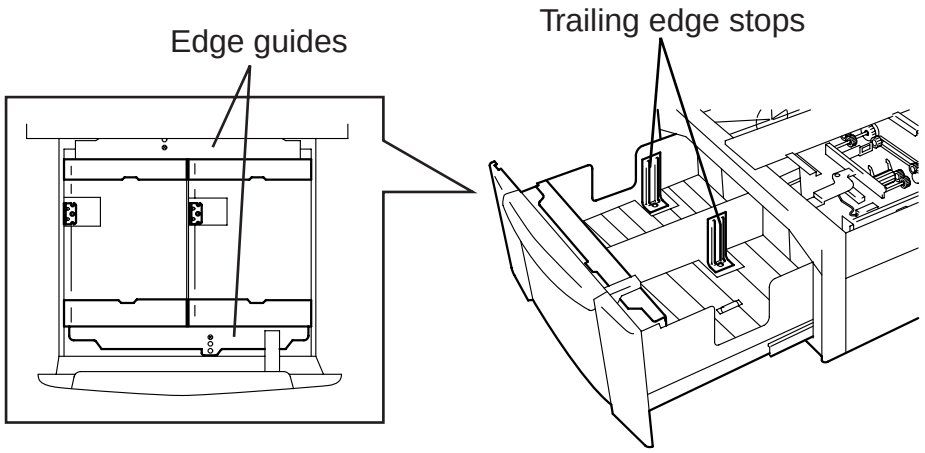
6.5.1.6.6 Paper Take-Up Roll Retracting Mechanism

The pressure between the paper and Paper Take-Up Roll is released by the projection on the back side of the Front Cover, Pressure Release Lever, and Paper Take-Up Roll Assy.
When the LCC is slid out, it releases the Pressure Release Lever, which pushes the Paper Take-Up Roll upward to release pressure between the paper and Paper Take-Up Roll.



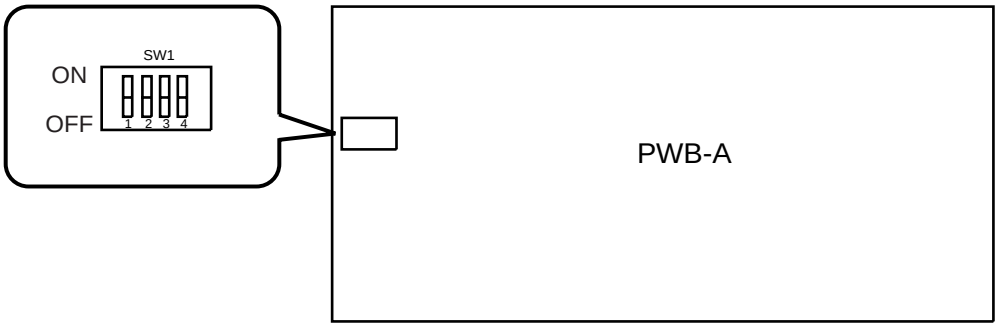
6.5.1.6.7 Edge Guides and Trailing Edge Stop

The Trailing Edge Stop is screwed into position (not used for Letter crosswise).
Edge Guides can be slid into any desired position.
Whenever the positions of the Edge Guides and Trailing Edge Stop have been changed, be sure to perform the paper size setting procedure. (See “Paper Size Setting” that follows.)
* The inch area LCC can be set for Letter crosswise only.



6.5.1.6.8 Paper Size Setting

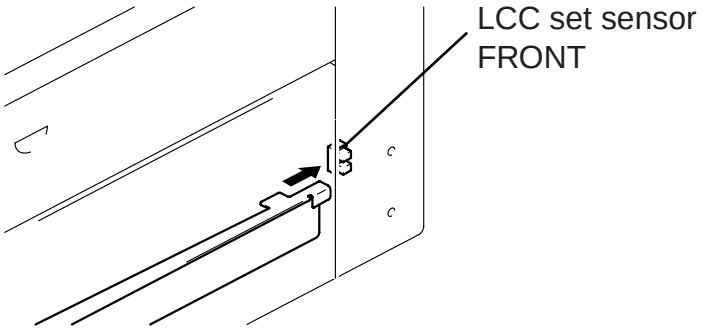
The paper sizes that can be set are A4 crosswise, B5 crosswise, and Letter crosswise.
After the positions of the Edge Guides and Trailing Edge Stop have been changed, place the DIP switch keys on LCC Main Board PWB-A in the corresponding positions according to the current paper size.



SW1	Letter Crosswise	A4 Crosswise	B5 Crosswise
1	OFF	ON	OFF
2	OFF	OFF	ON
3	OFF	OFF	OFF
4	OFF	OFF	OFF

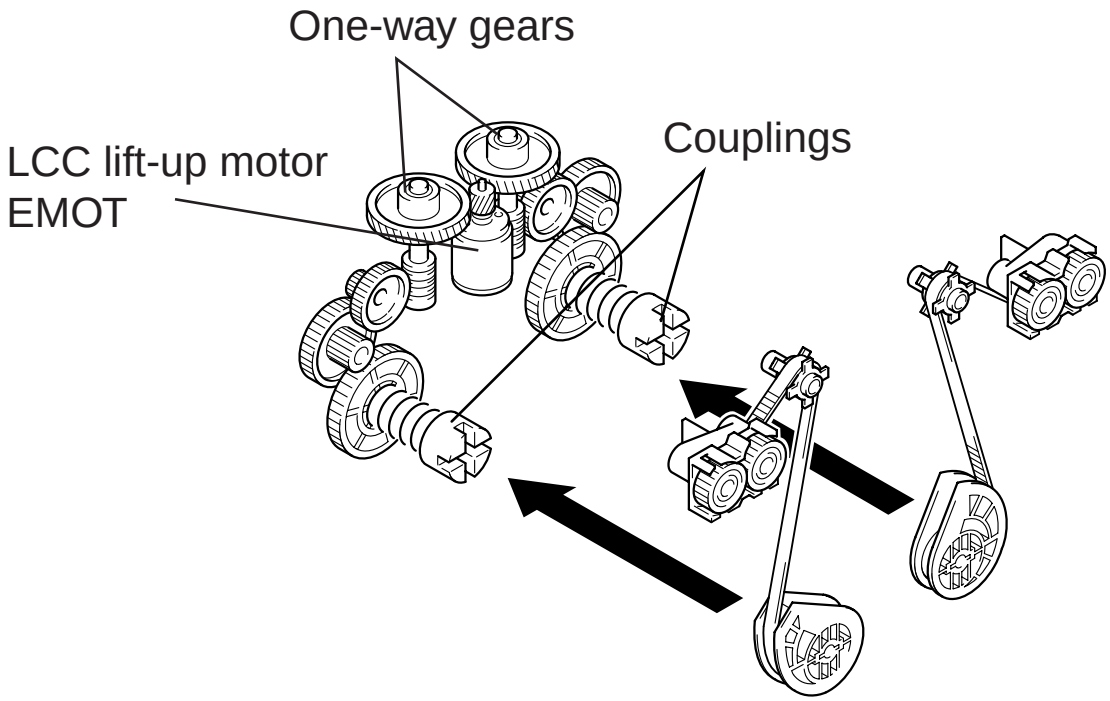
6.5.1.6.9 LCC-in-Position Detection

The LCC is detected at its closed position when the light blocking plate provided on the rear end of the right rail blocks LCC Set Sensor FRONT.

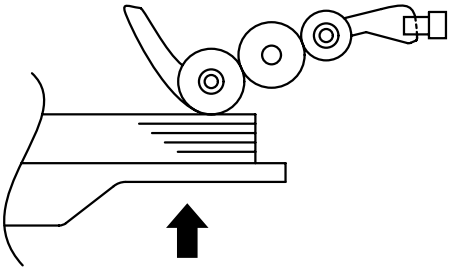


6.5.1.6.10 Lifting Mechanism

When the LCC is slid into the machine, the couplings are engaged. When LCC Lift-Up Motor EMOT turns forward and backward, its drive is transmitted via a one-way gear and gear train to raise Lift 1 and Lift 2, in that order.
A one-way gear is in each of the Lift 1 and 2 drive mechanisms. When EMOT turns for-ward, its drive is transmitted to Lift 1 and when the motor turns backward, its drive is trans-mitted to Lift 2.



When LCC is Slid in:



LCC Set Sensor FRONT is blocked.

LCC Lift-Up Motor EMOT turns forward to raise Lift 1.

↓

The paper stack causes the light blocking plate of the Paper Take-Up Roll 1 Assy to block Lift-Up Sensor 1 LS1.

↓

EMOT is deenergized and then energized to start turning backward, thereby raising Lift 2.

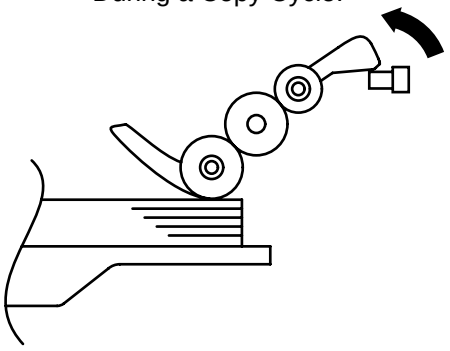
↓

The paper stack causes the light blocking plate of the Paper Take-Up Roll 2 Assy to block Lift-Up Sensor 2 LS2.

↓

EMOT is deenergized.

During a Copy Cycle:



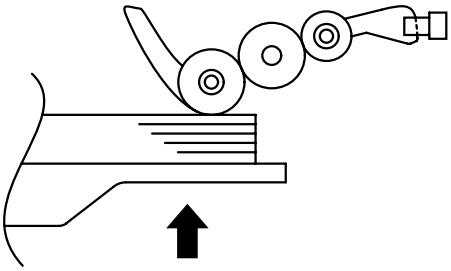
Paper is consumed as copy cycles are run.

↓

The Paper Take-Up Roll gradually lowers, unblocking the Lift-Up Sensor.

↓

EMOT is energized and the Lift is raised. This lifts the paper stack to block the Lift-Up Sensor.

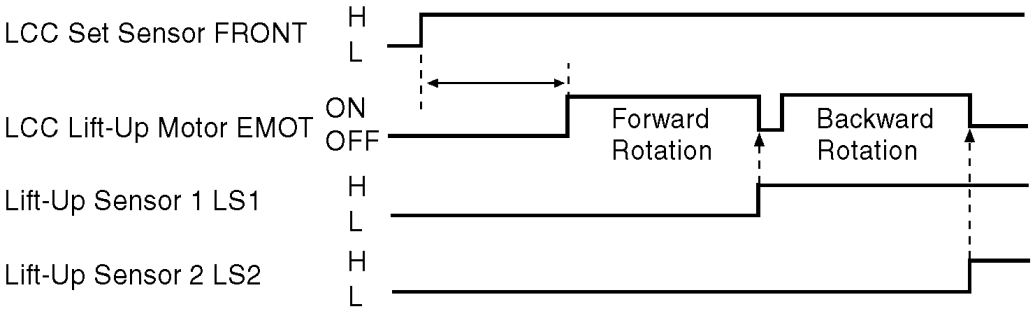


Both Lift 1 and 2 perform these sequences of operations to keep a given pressure between the paper and Paper Take-Up Roll.

1. Lift 1 and 2 Ascent Conditions
- The LCC is slid into position.
- The Lift-Up Sensor is unblocked while a paper take-up sequence is being carried out with paper present on the Lift.

2. Lift 1 and 2 Stop Conditions
- The Lift-Up Sensor is blocked.
- The Lift-Up Sensor is blocked while the paper stack top level position is being corrected.

When LCC is Slid in:



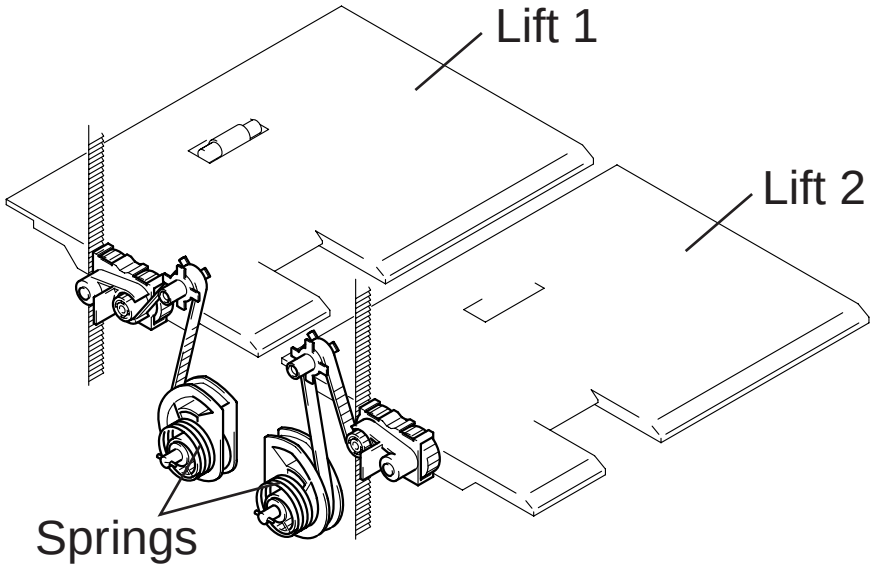
3. LCC Lift-Up Motor EMOT Control

LCC Lift-Up Motor EMOT is a DC motor. It is energized or deenergized and its direction of rotation is determined by the Motor Control signals applied from the machine's Master Board to pins 1 and 2 of CN5 of LCC Main Board PWB-A.

EMOT	Lift 1	Lift 2	CN5	
			1	2
Energized (Forward Rotation)	Ascent	Stop	H	L
Energized (Backward Rotation)	Stop	Ascent	L	H
Deenergized	Stop	Stop	L	L

4. Descent Motion

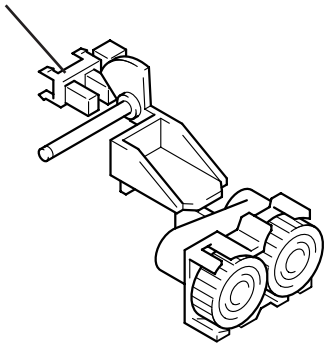
When the LCC is slid out of the machine, Lift 1 and 2 are lowered. To absorb shocks that would otherwise be applied during the descent motion, springs are loaded in the rear side of the LCC.



6.5.1.6.11 Paper Near Empty Detection

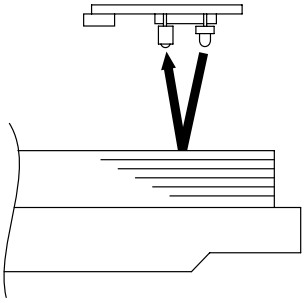
A paper-near-empty condition is detected by sensing the height of Lift 1 or Lift 2. When paper is consumed during a copy cycle, Lift 1 or 2 gradually moves up. This eventually blocks the Paper Near Empty Sensor, at which timing the machine determines that the LCC will soon run out of paper (the amount of paper (80 g/m^2) still available for use is 100 ±50 sheets) and gives a corresponding message on the LCD.
Since the amount of paper still available for use varies while a paper take-up sequence is in progress, detection is made at a timing when the Paper Take-Up Roll is in the retracted position.

Paper near empty sensor 1/2
RS1/RS2



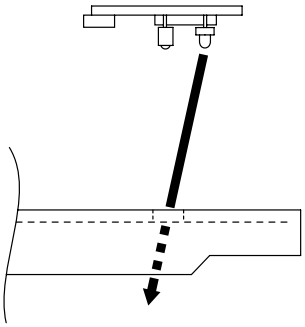
6.5.1.6.12 Paper Empty Detection

A paper-empty condition is detected by a reflector type photosensor, Paper Empty Sensor 1 PPS1 and Paper Empty Sensor 2 PPS2, installed in the Paper Take-Up Unit. When a paper-empty condition is detected, the corresponding message is displayed on the LCD.



- When Paper is Loaded

The light from the LED of Paper Empty Sensor 1 PPS1 or Paper Empty Sensor 2 PPS2 is reflected, with which the machine determines that there is paper in LCC.



- When No Paper is Loaded

The light from the LED of Paper Empty Sensor 1 PPS1 or Paper Empty Sensor 2 PPS2 is not reflected, with which the machine determines that there is no paper loaded in the LCC.

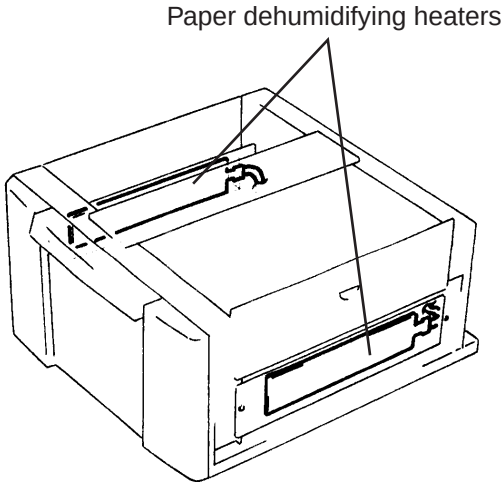
Panel Display

	Lift 1		
Lift 2		Paper-near-empty	Paper-empty
	Paper-near-empty	❍	❍
	Paper-empty	❍	◎

❍ : Paper-near-empty display ◎ : Paper-empty display

6.5.1.6.13 Paper Dehumidifying Heaters (Option)

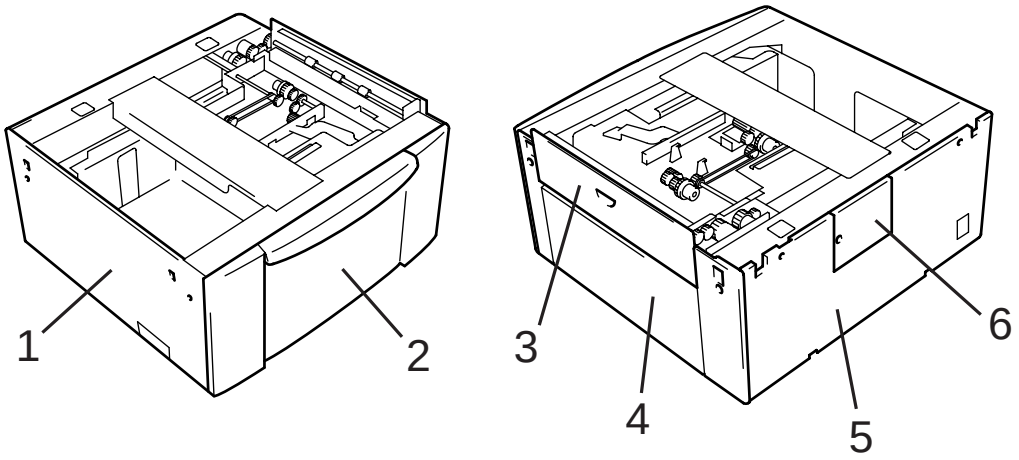
To prevent paper passage performance from being degraded by damp paper under highly humid conditions, Paper Dehumidifier Heaters are mounted on both sides of the LCC. As long as the power cord is plugged in, these heaters are kept ON at all times.



6.5.2 DIS/REASSEMBLY, ADJUSTMENT

6.5.2.1 Disassembly

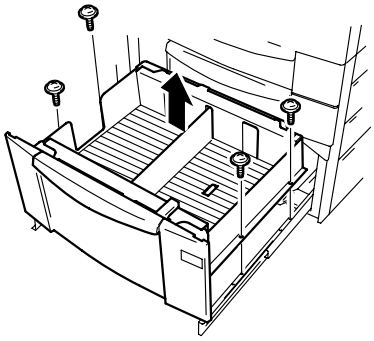
6.5.2.1.1 Removal of Exterior Parts



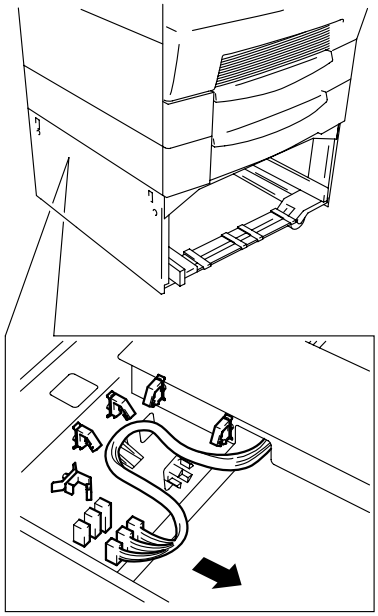
No.	Part Name	Removal Steps
1	Left Cover	Remove two screws.
2	Front Cover	Slide out the LCC and remove three screws.
3	Side Panel	Open the Side Panel.
4	Right Cover	Remove two screws.
5	Rear Cover	After the Maintenance Panel has been removed, remove four screws.
6	Maintenance Panel	Remove one screw.

6.5.2.1.2 Removal of the Paper Take-Up Unit

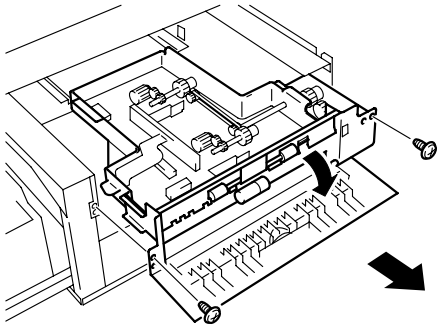
1. Remove the LCC.



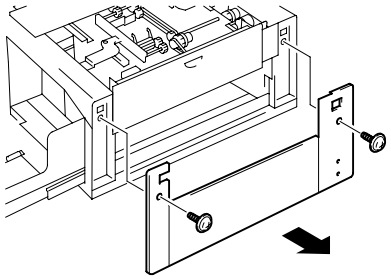
2. Unplug three connectors and remove the har-ness from five cord clamps.



3. Remove two screws and the Right Cover.

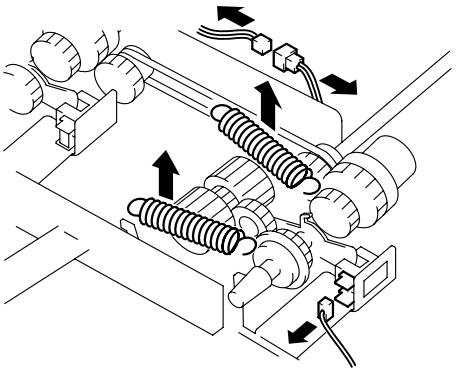


4. Open the Side Panel.
5. Remove two screws and the Paper Take-Up Unit.

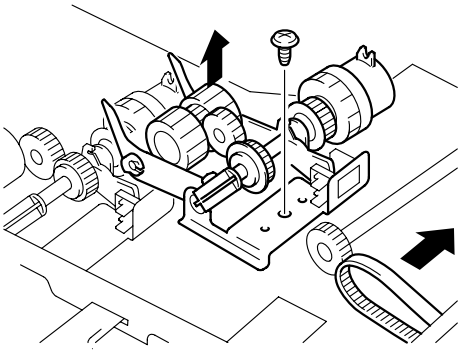


6.5.2.1.3 Removal of the Paper Take-Up Rolls

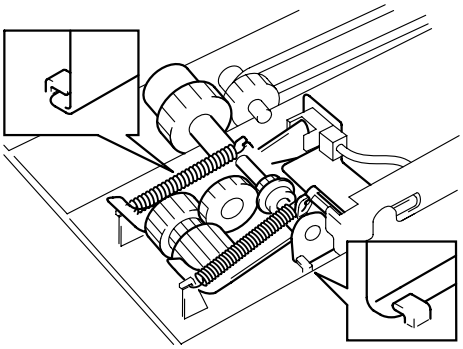
1. Remove the Paper Take-Up Unit.
2. Unplug one connector of Lift-Up Sensor 1 and another of Take-Up Clutch 1 of the right Paper Take-Up Roll Assy.
3. Unhook two springs.



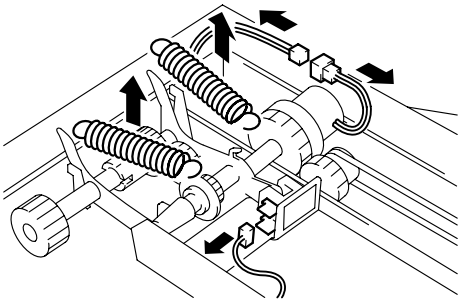
4. Remove one screw and, while removing the timing belt toward the clutch side, remove the right Paper Take-Up Roll Assy.



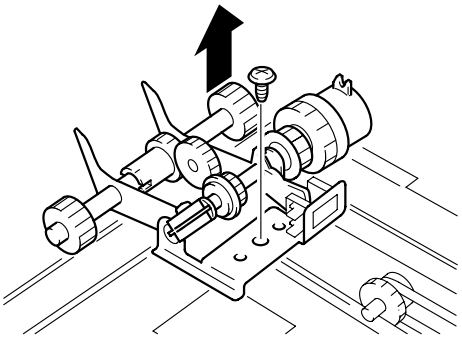
When mounting the right Paper Take-Up Roll Assy, fit the ends of the assy into position as shown.



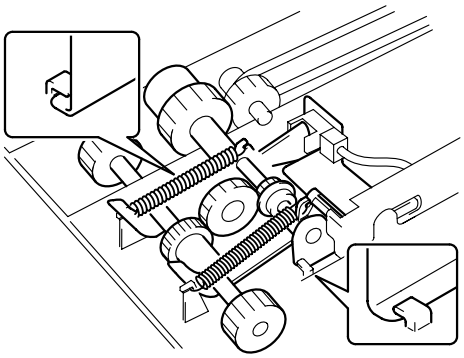
5. Unplug one connector of Lift-Up Sensor 2 and another of Take-Up Clutch 2 of the left Paper Take-Up Roll Assy.
6. Unhook two springs.



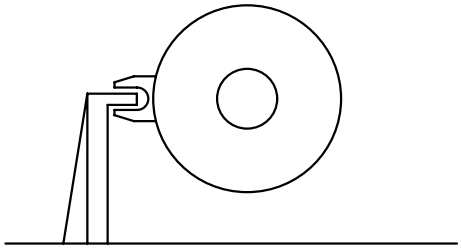
7. Remove one screw and the left Paper Take-Up Roll Assy.



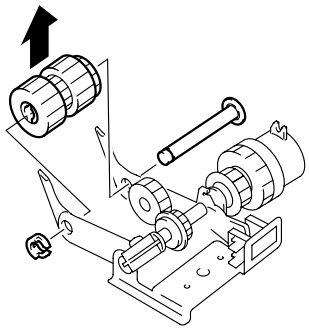
When mounting the left Paper Take-Up Roll Assy, fit the ends of the assy into position as shown.



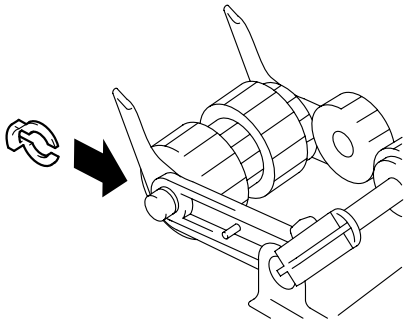
When mounting the Paper Take-Up Roll Assys, fit the Take-Up Clutch into position as shown.



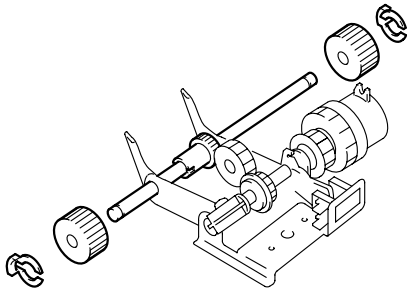
8. Snap off one C-clip from the Paper Take-Up Roll 1 shaft.
9. Take the shaft and Paper Take-Up Roll 1 apart.



When mounting Paper Take-Up Roll 1, face the C-clip as shown.

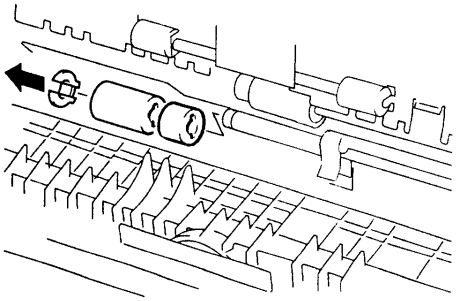


10. Snap off two C-clips and take off Paper Take-Up Roll 2.

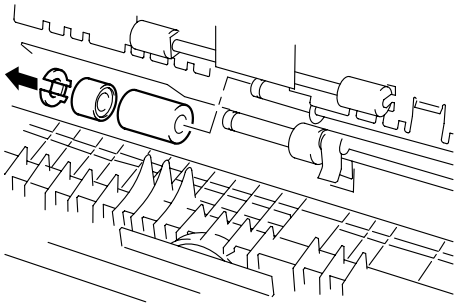


6.5.2.1.4 Removal of the Feed Roll, Separator Roll and Torque Limiter Assy.

1. Open the Side Cover.
2. Snap off one C-clip from the Separator Roll shaft and remove the Separator Roll and Torque Limiter Assy.

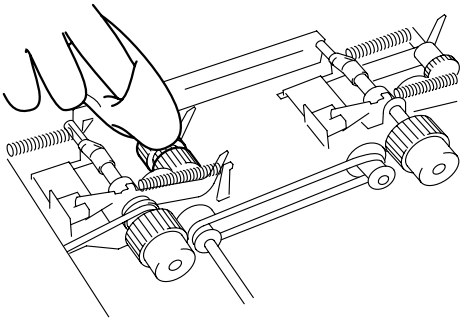


3. Snap off one C-clip from the Feed Roll shaft and remove the Feed Roll.



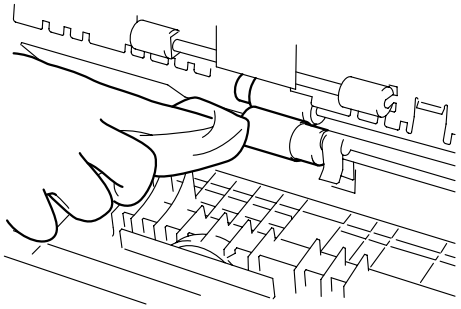
6.5.2.1.5 Cleaning of the Paper Take-Up Roll

1. Remove the Paper Take-Up Unit.
2. Wipe the surface of Paper Take-Up Roll 1 & 2 clean with a soft cloth dampened with alcohol.

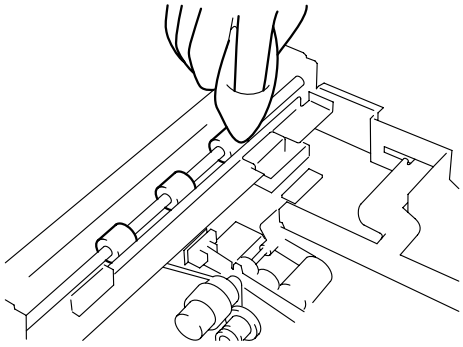


6.5.2.1.6 Cleaning of the Feed Roll and Separator Roll

1. Open the Side Panel.
2. Wipe the surface of the Feed/Separator Roll clean with a soft cloth dampened with alcohol.

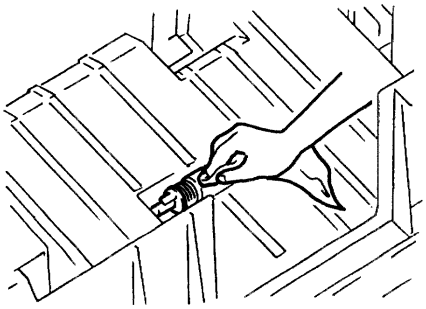


6.5.2.1.7 Cleaning of the Vertical Transport Roller/Rolls



1. Remove the Paper Take-Up Unit.
2. Wipe the surface of the Vertical Transport Roller/Rolls clean with a soft cloth dampened with alcohol.

6.5.2.1.8 Cleaning of the Roll with a Torque Limiter



1. Slide out the LCC.
2. Wipe the surface of the Roll with a Torque Limiter clean with a soft cloth dampened with alcohol.

6.5.2.2 Adjustment

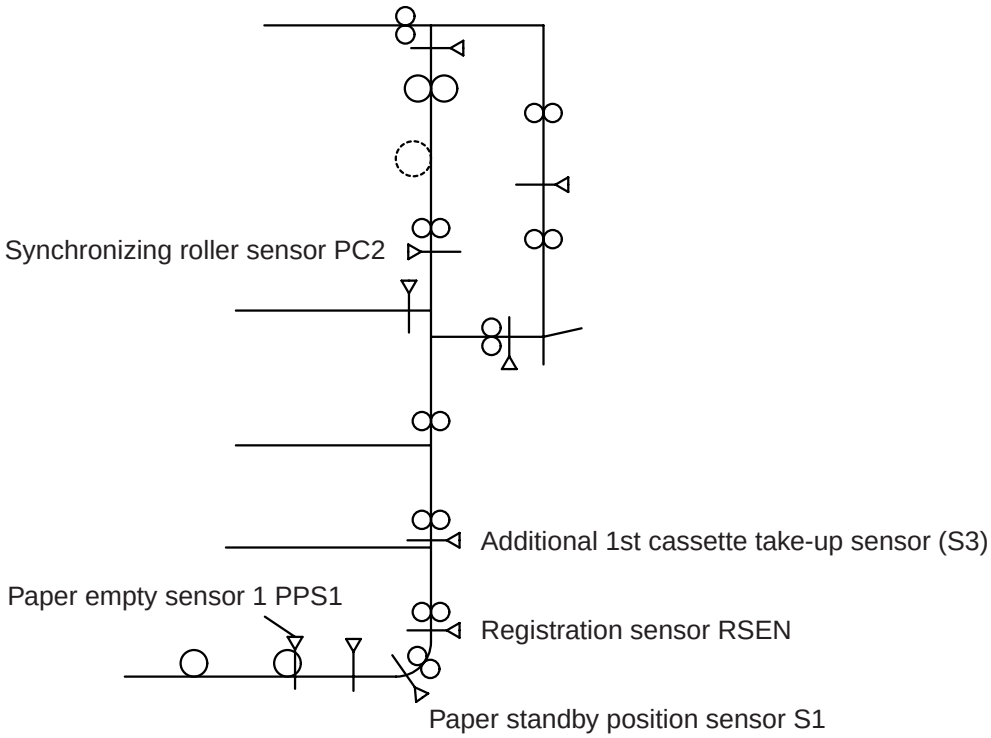
6.5.2.2.1 Registration Adjustment (Printer)

See “5.3.1 Printer Registration (top)” on page 5-81 and “5.3.2 Printer Registration (side)” on page 5-82.

6.5.3 MISFEED/MALFUNCTION DETECTION

6.5.3.1 Misfeed Detection

6.5.3.1.1 Misfeed Detecting Sensor Layout

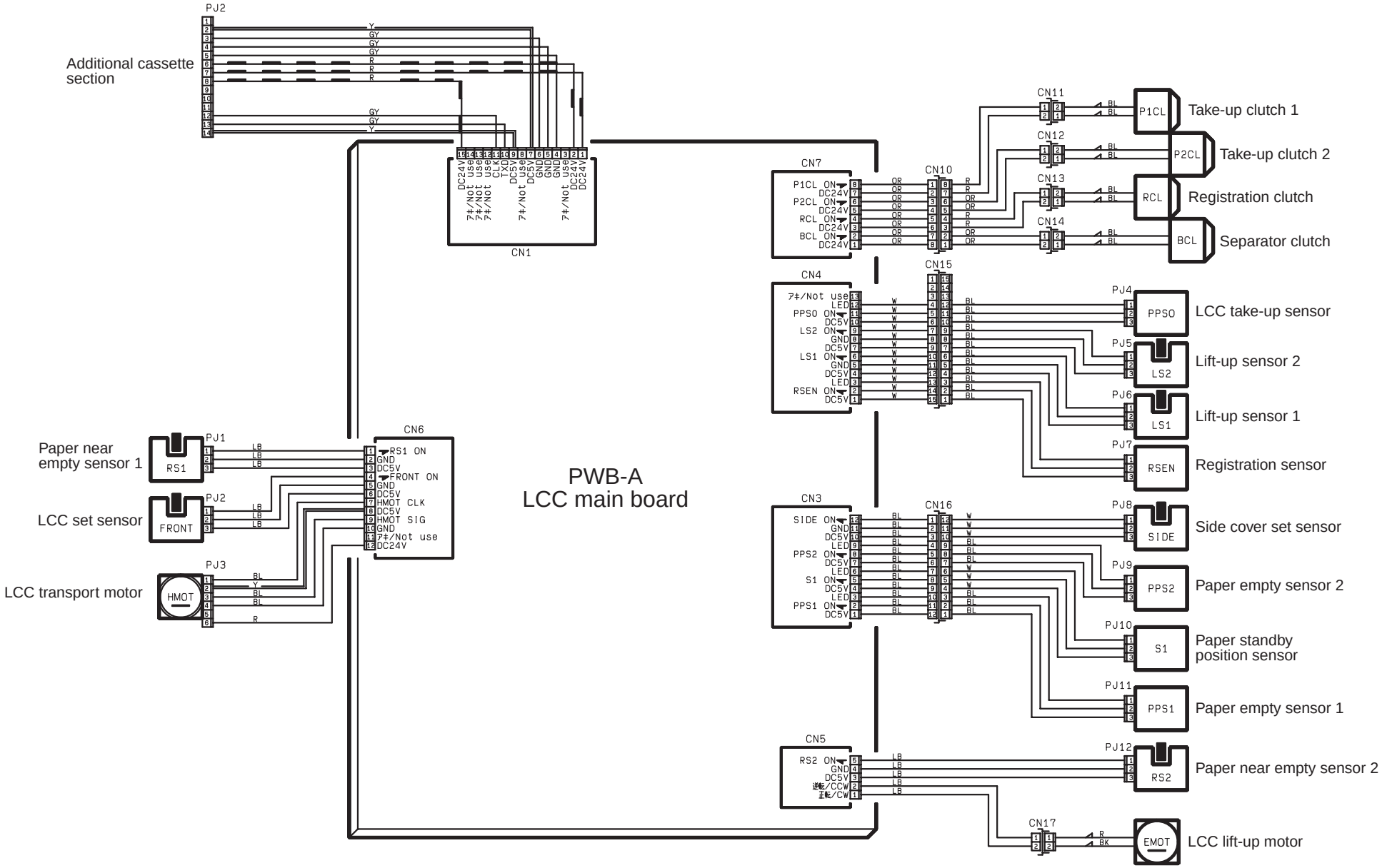

Synchronizing roller sensor PC2
Additional 1st cassette take-up sensor (S3)
Paper empty sensor 1 PPS1
Registration sensor RSEN
Paper standby position sensor S1

6.5.3.1.2 Types of Misfeed and Misfeed Detection Timings

Type	Detection Timing
Paper left	The output from Registration Sensor RSEN is blocked (H) when the machine Power Switch is turned ON or a misfeed is reset.
Lift 1 paper take-up failure detection	Paper Standby Position Sensor S1 is not blocked (H) within a given period of time after Take-Up Clutch 1 P1CL has been energized.
Lift 2 paper take-up failure detection	Paper Empty Sensor 1 PPS1 is not blocked (H) within a given period of time after Take-Up Clutch 2 P2CL has been energized.
	S1 is not blocked (H) within a given period of time after P1CL has been energized.
Registration Sensor paper leading edge detection	RSEN is not blocked (H) within a given period of time after Separator Clutch BCL has been energized (after two paper take-up retry sequences).
Registration Sensor paper trailing edge detection	RSEN is not unblocked (L) within a given period of time after Registration Clutch RCL has been energized.
Vertical transport paper leading edge detection	• LCC only: Synchronizing Roller Sensor PC2 is not unblocked (H) within a given period of time after Registration Clutch RCL has been turned ON.
	• Additional 1st cassette + LCC: Take-Up Sensor S3 of the additional 1st drawer is not blocked (H) within a given period of time after Registration Clutch RCL has been turned ON.
Size error detection * The detection described on the right is also made during a 2-sided copy cycle.	• LCC only: The period of time is counted from when Synchronizing Roller Clutch CL1 is energized to when Synchronizing Roller Sensor PC2 is blocked (L). The difference between the detected length and the paper size which has been recognized is more than ±20 mm. • Additional 1st cassette + LCC: The period of time is counted from when Take-Up Sensor S3 of the additional 1st drawer is blocked (L) to when it is unblocked (H). The difference between the detected length and the paper size which has been recognized is more than ±20 mm.

6.5.3.2 Malfunction Detection

Malfunction Code	Description	Detection Timing
21	LCC Lift-Up Motor EMOT failure to turn	The overcurrent detection circuit detects an overcurrent condition that lasts for a given period of time while EMOT remains energized.
23	Lift 1 ascent motion failure	Lift-Up Sensor 1 LS1 is not blocked (H) within a given period of time after EMOT has been energized (Lift 1 has started moving up).
20	LCC Transport Motor HMOT failure to turn	The HMOT Lock signal is not input for a given period of time.
24	Lift 2 ascent motion failure	Lift-Up Sensor 2 LS2 is not blocked (H) within a given period of time after EMOT has been energized (Lift 2 has started moving up).
25	Communications error	LCC becomes uncontrollable due to an error in communications between the LCC and machine.


Additional cassette section
PJ2
CN1
PWB-A
LCC main board
Paper near empty sensor 1
PJ1
RS1
LCC set sensor
PJ2
FRONT
LCC transport motor
PJ3
HMOT
CN6
CN7
CN10
CN11
CN12
CN13
CN14
P1CL
P2CL
RCL
BCL
Take-up clutch 1
Take-up clutch 2
Registration clutch
Separator clutch
CN4
CN15
PJ4
PPSO
LCC take-up sensor
PJ5
LS2
Lift-up sensor 2
PJ6
LS1
Lift-up sensor 1
PJ7
RSEN
Registration sensor
CN3
CN16
PJ8
SIDE
Side cover set sensor
PJ9
PPS2
Paper empty sensor 2
PJ10
S1
Paper standby position sensor
PJ11
PPS1
Paper empty sensor 1
CN5
PJ12
RS2
Paper near empty sensor 2
CN17
EMOT
LCC lift-up motor

6.6 2-Bin/Shift Tray Unit

6.6 Shift/2-Bin Tray Unit 6-54
6.6.1 GENERAL, MECHANICAL/ELECTRICAL 6-55
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6.6.1.2 Part Identification 6-56
6.6.1.3 Cross-Sectional View 6-57
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6.6.1.6 Operation Of Each Mechanism 6-61
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Note: Throughout the entire text of this manual, the following product codes are used to denote the products covered in this manual:

- JS-200: Job Tray
- OT-100: Shift Tray

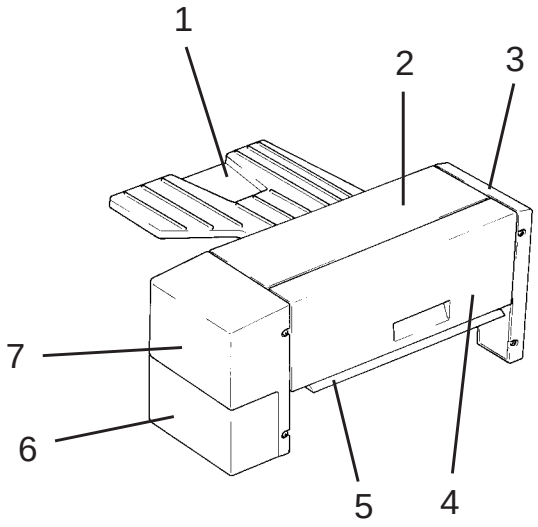
6.6.1 GENERAL, MECHANICAL/ELECTRICAL

6.6.1.1 Specifications

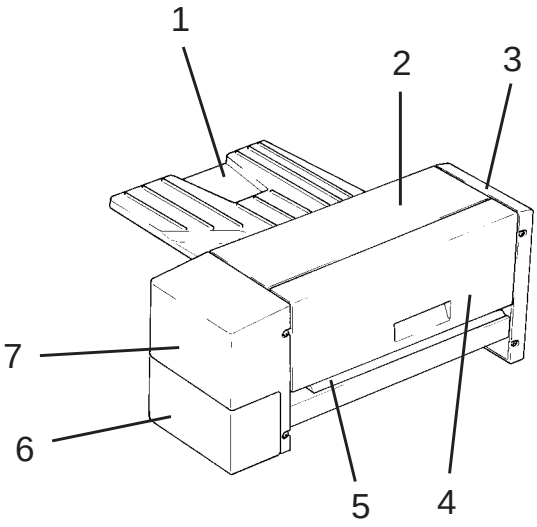
Type	: Job Tray: Straight ejection (Paper Path Switching Type Job Tray) Shift Tray: Straight ejection (Job Offset Tray)
Installation	: Desktop
Copy Media	: Plain paper weighing 60 to 90 g/m², OHP transparen-cies, heavy paper (91 to 163 g/m²), postcards, envelopes
Size	: Job Tray: A3 to A6L (11″×17″ to 4″×5.75″L) Shift Tray: A3 to A6L (11″×17″ to 4″×5.75″L) (in Non-Sort mode) A3 to A5C (11″×17″ to 5.5″×8.5″C) (in Sort or Group mode)
Max. Capacity	: Plain paper: Job Tray: 100 sheets (Upper Exit Tray) + 250 sheets (Lower Exit Tray) Shift Tray: 250 sheets (Exit Tray) Transparencies, thick paper, postcards, envelopes: Job Tray: 20 sheets (Lower Exit Tray) Shift Tray: 20 sheets (Exit Tray)
Power Requirements	: DC24V ±10%, DC5V ±5% (supplied from main unit)
Max. Power Consumption	: 26W or less
Dimensions	: 486 (W) × 500 (D) × 201 (H) mm (Job Tray) (19.25″ (W) × 19.75″ (D) × 8″ (H)) 490 (W) × 556 (D) × 201 (H) mm (Shift Tray) (19.25″ (W) × 22″ (D) × 8″ (H))
Weight	: Job Tray: 4.7 kg (10.25 lbs) (including bracket) Shift Tray: 6.8 kg (15 lbs) (including bracket)
Environmental Requirements	: Same as machine

6.6.1.2 Part Identification

<Job Tray>



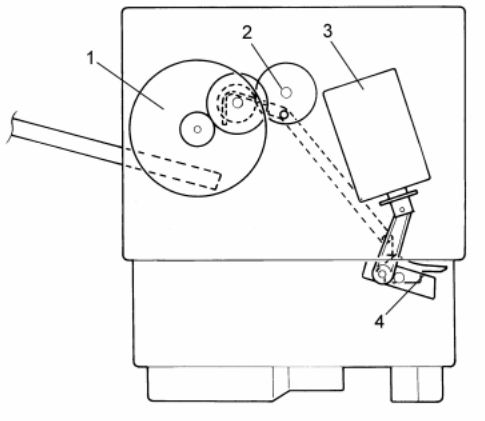
<Shift Tray>



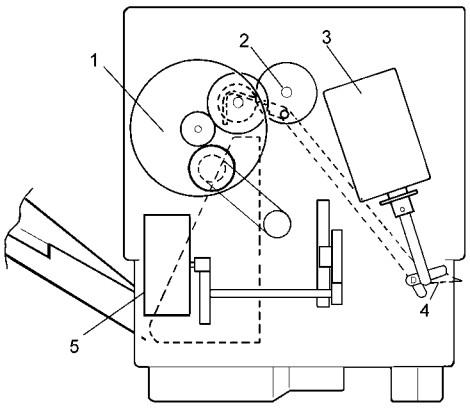
1. Exit Tray
2. Top Cover
3. Rear Cover
4. Paper Misfeed Removal Door
5. Exit Path Switching Plate
6. Lower Front Cover
7. Front Cover

6.6.1.3 Cross-Sectional View

<Job Tray>



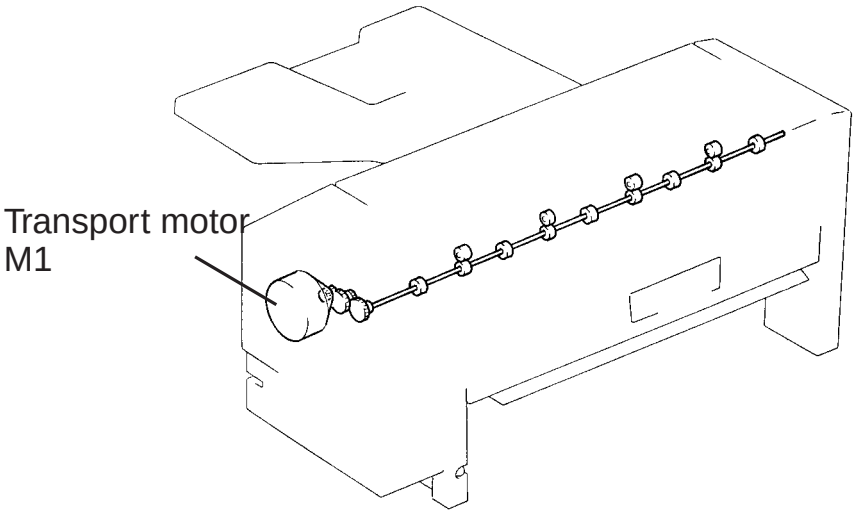
<Shift Tray>



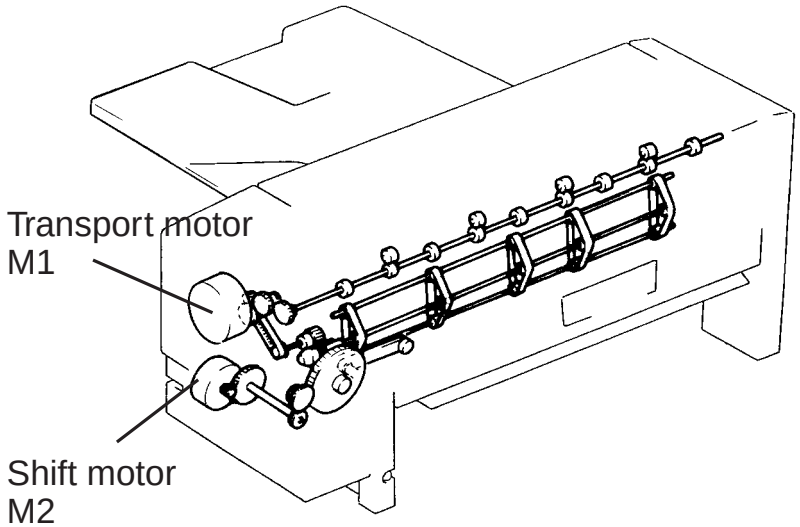
1. Transport Motor M1
2. Paper Exit Roller
3. Path Switching Solenoid SL1
4. Exit Path Switching Plate
5. Shift Motor M2 (Shift Tray only)

6.6.1.4 Drive System

<2-Bin tray>

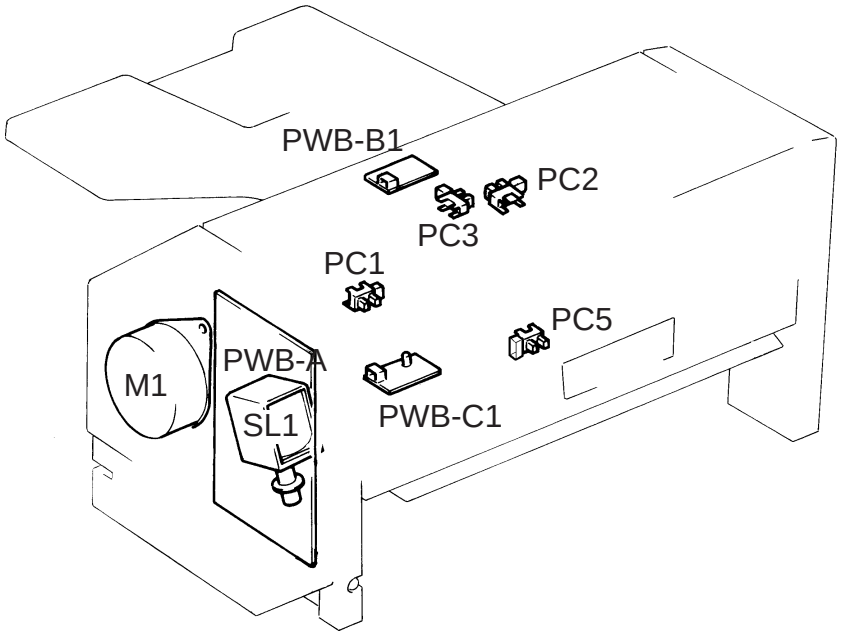


<Shift tray>



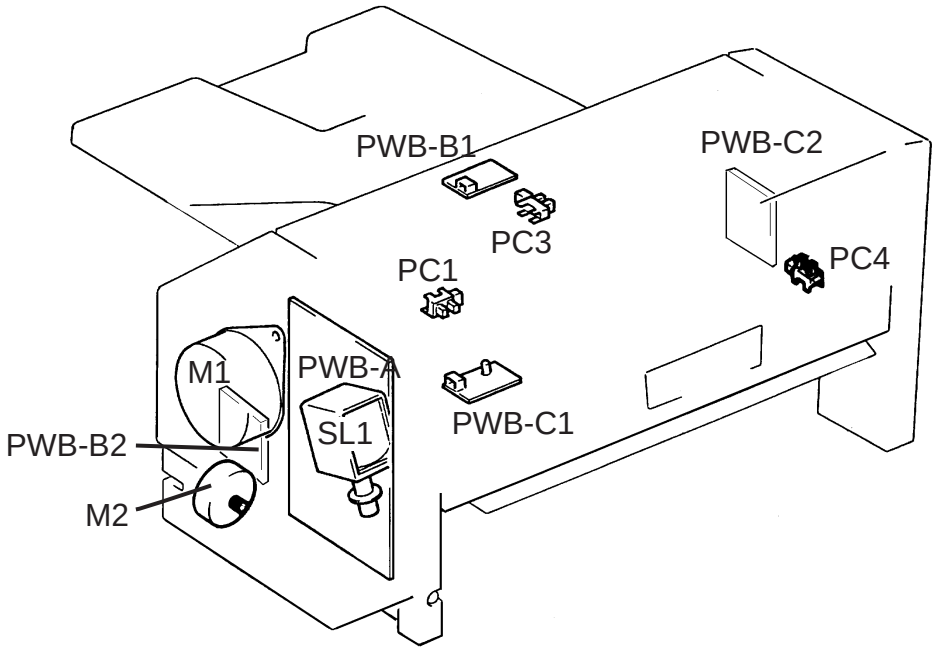
6.6.1.5 Electrical Components Layout

<2-Bin Tray>



Symbol	Name	Symbol	Name
PWB-A	Main Board	PC1	Paper Misfeed Removal Door Set Sensor
PWB-B1	Upper Empty Sensor PQ Board	PC2	Upper Full Detecting Sensor
PWB-C1	Upper Empty Sensor LED Board	PC3	Upper Exit Sensor
M1	Transport Motor	PC5	Lower Full Detecting Sensor
SL1	Path Switching Solenoid		

<Shift Tray>



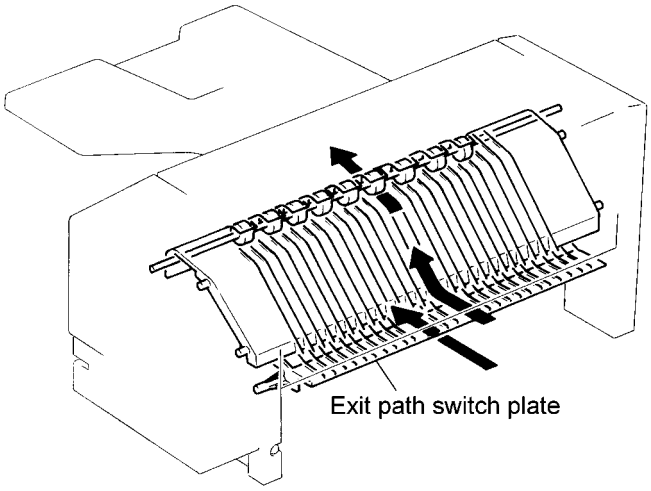
Symbol	Name	Symbol	Name
PWB-A	Main Board	M2	Shift Motor
PWB-B1	Upper Empty Sensor PQ Board	SL1	Path Switching Solenoid
PWB-C1	Upper Empty Sensor LED Board	PC1	Paper Misfeed Removal Door Set Sensor
PWB-B2	Upper Full Sensor PQ Board	PC3	Upper Exit Sensor
PWB-C2	Upper Full Sensor LED Board	PC4	Shift Home Sensor
M1	Transport Motor		

6.6.1.6 Operation Of Each Mechanism

6.6.1.6.1 Paper Transport Mechanism

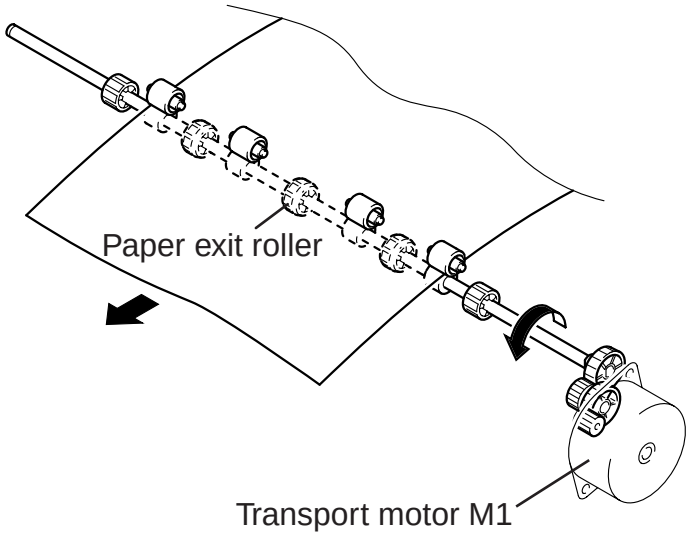
(1) Paper Transport Path

A sheet of paper fed out of the machine by the Paper Exit Roller/Rolls of the machine is fed through, and out of, this unit by the unit's Paper Exit Roller onto the unit's Exit Tray.
Since this unit is mounted directly on top of the machine, Section over the machine Exit Tray, it serves as an upper exit tray. The tray into which paper is fed out is selected depending on the copying mode.



(2) Paper Exit Roller Drive

The Paper Exit Roller is driven by Transport Motor.



(3) Control of Transport Motor

A two-phase stepping motor is used as Transport Motor. The motor is turned as the pulse signals output from PJ8A-1 to 4 are applied to it. The direction of the motor rotation is switched by changing the output sequence of these pulse signals.

PJ8A	Step			
	1	2	3	4
1	L	L	H	H
2	H	H	L	L
3	L	H	H	L
4	H	L	L	H
Forward Rotation	→			

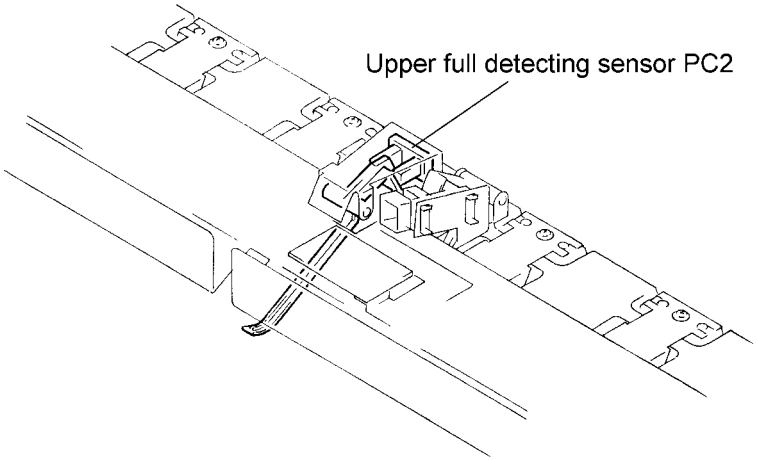
Transport Motor is energized when the paper fed through the machine during a copy cycle activates the Paper Exit Sensor of the machine if the Upper Exit Tray is selected as the exit port.
It is deenergized if the Paper Exit Sensor of the machine is not activated even after the lapse of 1 sec. after Upper Exit Sensor has been deactivated.

6.6.1.6.2 Full-of-Paper Detecting Mechanism

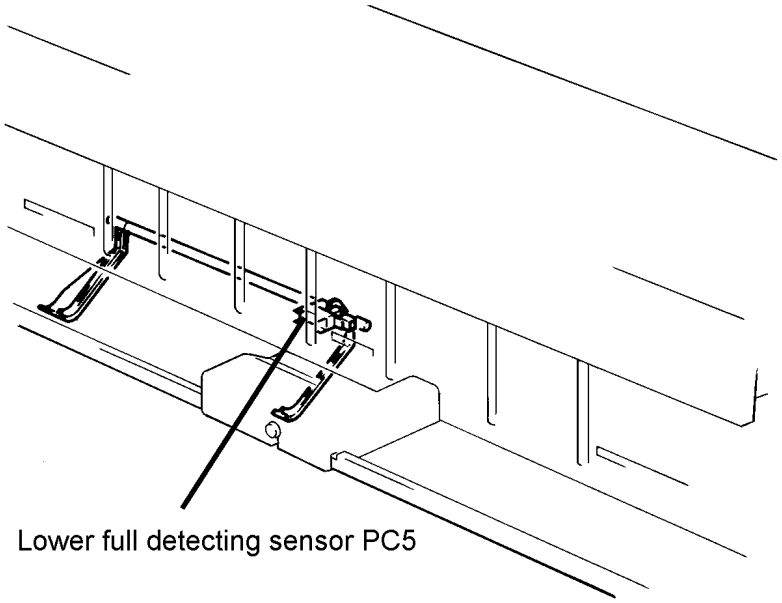
(1) Job Tray

- Paper is fed into the Upper Exit Tray or Lower Exit Tray depending on the copy mode.
  The paper being fed into the tray operates the actuator, which unblocks and blocks the Upper or Lower Full Detecting Sensor to allow the system to detect a full-of-paper condition.

(Upper Exit Tray)
A full-of-paper condition is detected when the Upper Full Detecting Sensor remains unblocked for a continuous, given period time.

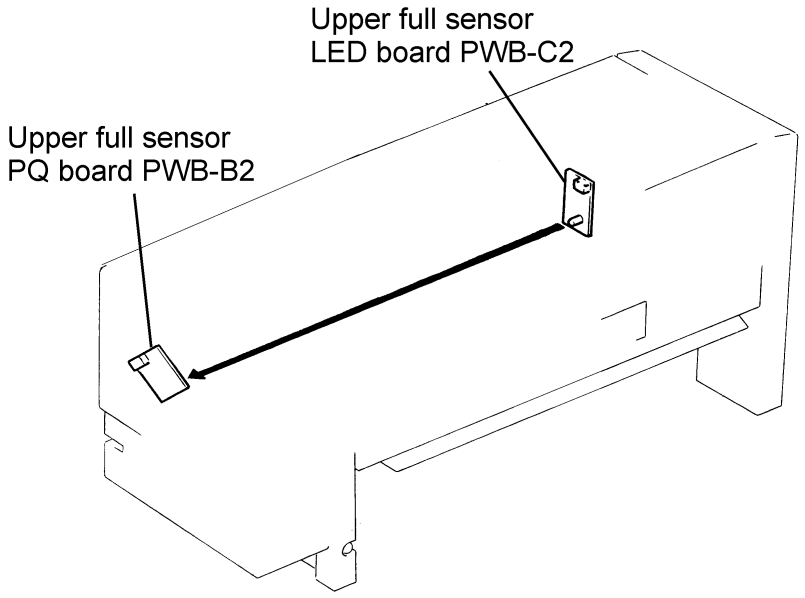


(Lower Exit Tray)
A full-of-paper condition is detected when the Lower Full Detecting Sensor remains unblocked for a continuous, given period time.



(2) Shift Tray

In the Shift Tray, a photointerruptor (PWB-B2, -C2) is used. When light from the PWB-C2 LED is blocked by a sheet of paper being fed out onto the tray, a full-of-paper condition is detected.



6.6.1.6.3 Exit Path Switching Mechanism

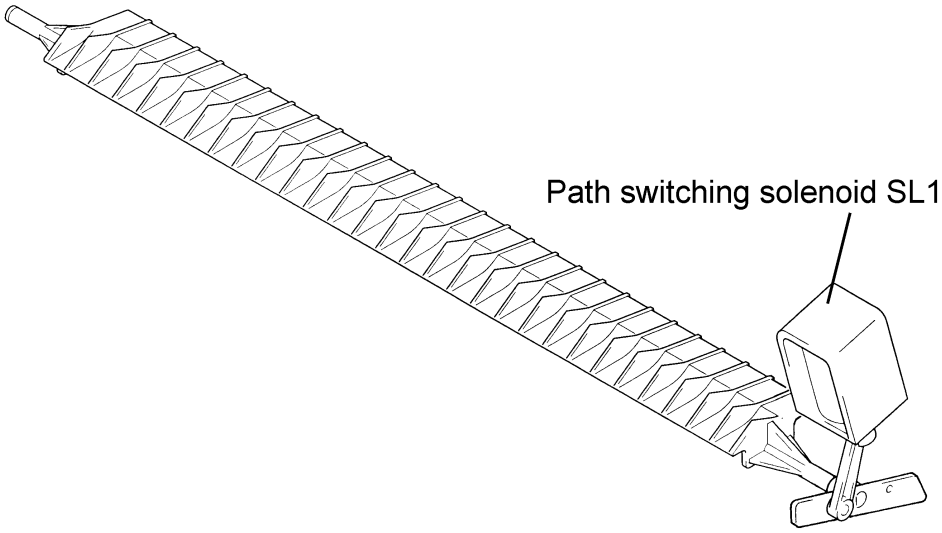
The paper path is selected by energizing or deenergizing Path Switching Solenoid SL1, which results in the Exit Path Switching Plate being swung down or up.

(1) Job Tray

The paper exit tray (Upper or Lower Exit Tray) is selected according to the setting made on the machine. When the Lower Exit Tray is selected, the Path Switching Solenoid is deenergized a given period of time after the Paper Exit Sensor of the machine has been blocked, thereby feeding the paper into the Lower Exit Tray.
In the 2-sided copy mode, the paper fed into this unit is reversed (switchback) and fed back towards the Duplex Unit. (The Path Switching Solenoid is deenergized if the Paper Exit Sensor of the machine is not blocked within a given period of time after the switchback operation has been started.)

(2) Shift Tray

In the 2-sided copy mode, if the length of the paper being fed into this unit exceeds 150 mm, the Path Switching Solenoid is energized after a given period of time after the Paper Exit Sensor of the machine has been blocked to reverse the paper under the Exit Tray and feed it back into the Duplex Unit.
If the length of the paper being fed into the unit is 150 mm or less, the Path Switching Solenoid is deenergized after a given period of time after the Paper Exit Sensor of the machine has been blocked to transport the paper into the Exit Tray.



	SL1 Energized	SL1 Deenergized
Job Tray	Paper fed into the Upper Exit Tray	Paper fed into the Lower Exit Tray
Shift Tray	For switchback to Duplex Unit	When feeding paper out

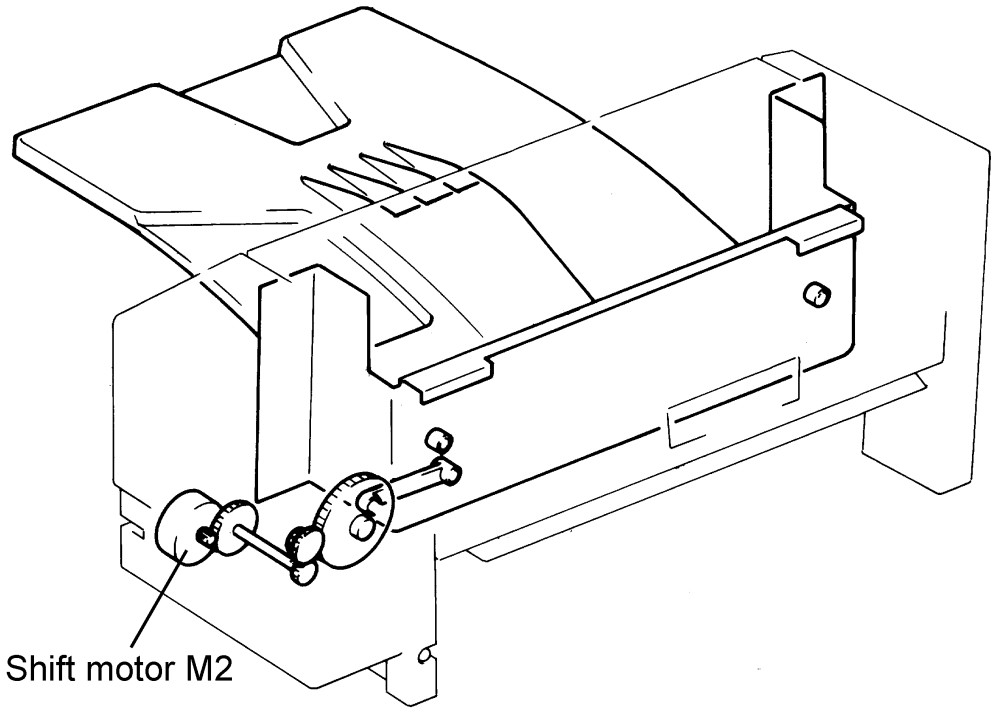
	Control Signal	ON	OFF
SL1	PJ6A-2	L	H

6.6.1.6.4 Initial Operation

The Transport Motor is energized at the same time when predrive of the machine is started (Job Tray/Shift Tray).
The unit carries out the Shift Tray home position detection sequence when the Power Switch of the machine is turned ON or when the Paper Misfeed Removal Door is opened and closed after a paper misfeed has been cleared (Shift Tray only).

(1) Shift Tray Home Position Detection

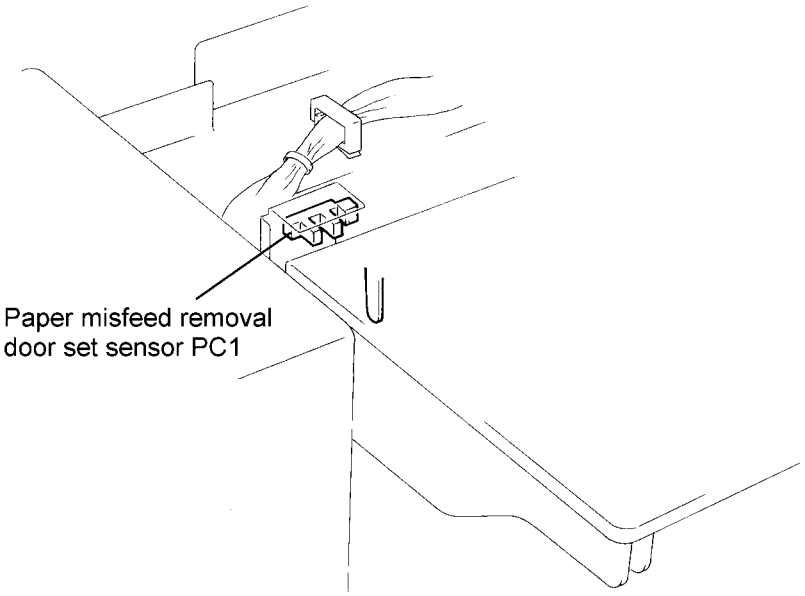
The unit determines that the Shift Tray is at its home position when the Shift Home Sensor is blocked by the light blocking plate.
(If the Shift Tray is at its home position)
The Shift Motor is energized (forward or backward rotation) so that the Shift Home Sensor is unblocked, then blocked again.
(If the Shift Tray is out of its home position)
The Shift Motor is energized until the Shift Home Sensor is blocked.



6.6.1.6.5 Paper Misfeed Removal Door Set Detection

The Paper Misfeed Removal Door is detected at its closed position by the Paper Misfeed Removal Door Set Sensor. The unit determines that the door is left open if the sensor remains unblocked for a given period of time and that it is closed if the sensor remains blocked for a given period of time.

If the sensor is unblocked, a closure failure warning is given on the machine control panel and the machine inhibits the initiation of a new copy cycle.



6.6.2 DIS/REASSEMBLY, ADJUSTMENT

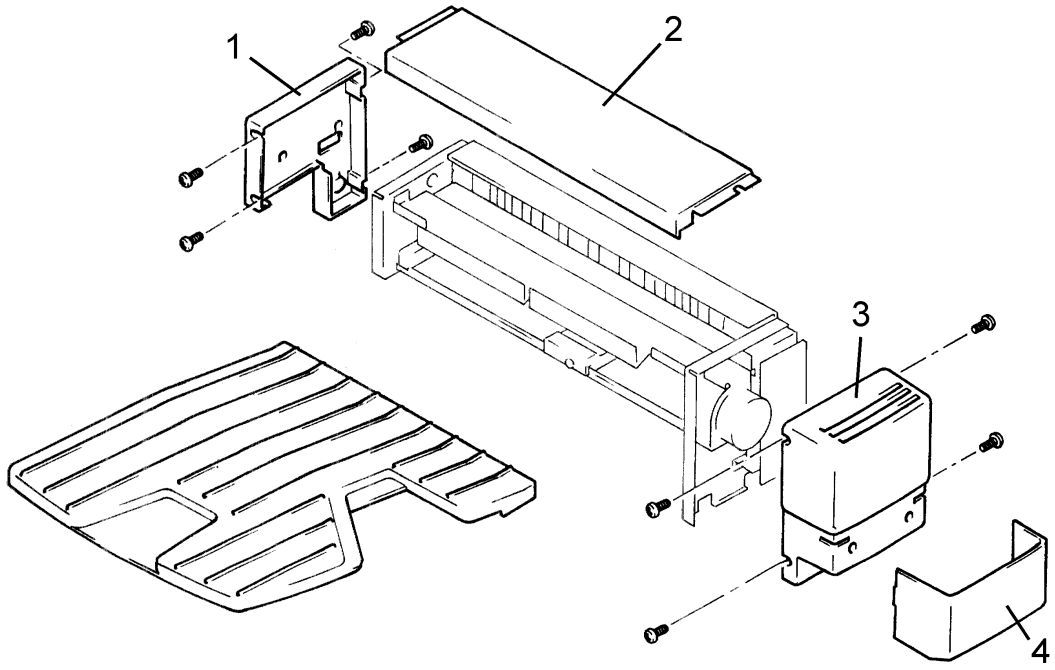
Precautions for Disassembly, Reassembly, and Adjustment

- Before attempting to disassemble the unit, always make sure that no power is being supplied from the machine (by unplugging the power connector from the machine).
- While power is being supplied to the unit, do not attempt to remove/install the print jacks from/to the PWBs or unplug/plug in the connectors.
- If the unit is run with its covers removed, use care not to allow your clothing to be caught in revolving parts.
- The basic rule is do not run the unit with any of its parts removed.
- A toothed washer is used with the screw that secures the ground wire to ensure positive conduction. Do not forget to include this washer at re-assembly.
- To reassemble the unit, reverse the order of disassembly unless otherwise specified.
- Do not attempt to remove or loosen the screws to which red paint has been applied.

6.6.2.1 Disassembly

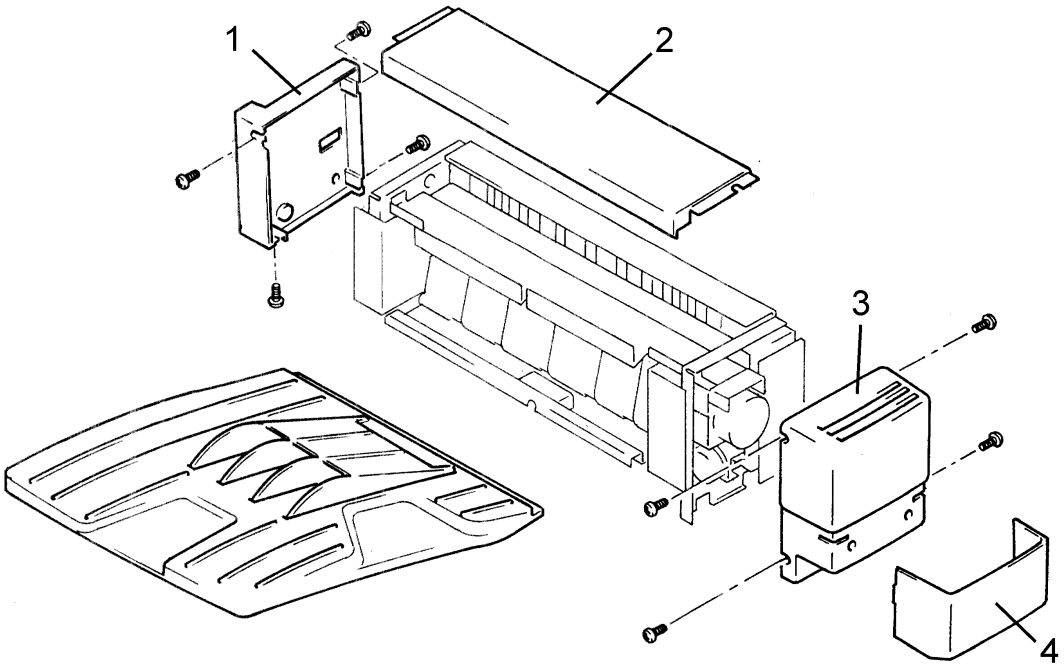
6.6.2.1.1 Removal of the Exterior Covers

<2-Bin Tray>



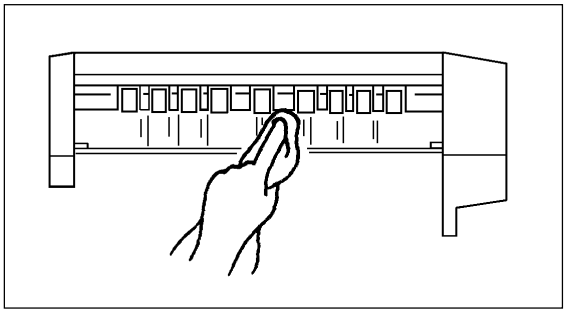
1. Rear Cover: Loosen four screws and slide the cover toward to the rear.
2. Top Cover: Remove the Front and Rear Covers and lift the cover upward.
3. Front Cover: Remove the Lower Front Cover, loosen four screws, and slide the cover to the front.
4. Lower Front Cover: Unlock the tabs and slide the cover to the front.

<Shift Tray>



1. Rear Cover: Loosen four screws and slide the cover toward to the rear.
2. Top Cover: Remove the Front and Rear Covers and lift the cover upward.
3. Front Cover: Remove the Lower Front Cover, loosen four screws, and slide the cover to the front.
4. Lower Front Cover: Unlock the tabs and slide the cover to the front.

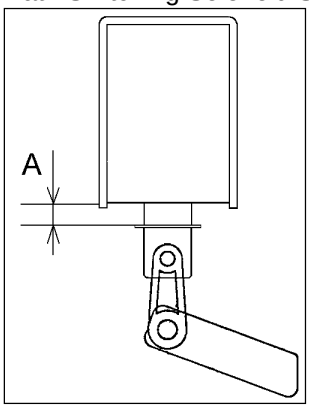
6.6.2.1.2 Cleaning of the Paper Exit Roller



Wipe the surface of the Paper Exit Roller clean of dirt with a cloth dampened with alcohol.

6.6.2.2 Adjustment

Path Switching Solenoid Stroke Adjustment



1. Remove the Main Board.

2. Loosen the two screws that secure the solenoid and adjust its position so that dimension A measures 5.2 to 4.7 mm (Job Tray) or 4.4 to 3.9 mm (Shift Tray).

6.6.3 TROUBLESHOOTING

6.6.3.1 Paper misfeed detection and trouble shooting procedures

6.6.3.1.1 Misfeed Detection

A paper misfeed is detected under any of the following conditions, causing a misfeed display to be given on the machine control panel.

Type	Detection Timing
Transport misfeed	The Upper Exit Sensor is not blocked within a given period of time after the Paper Exit Sensor of the machine has been blocked.
Paper left	The Upper Exit Sensor is blocked when the Power Switch is turned ON or a paper misfeed is reset.
Exit misfeed	The Upper Exit Sensor is not unblocked within a given period of time after the Paper Exit Sensor of the machine has been unblocked.

6.6.3.1.2 Misfeed Troubleshooting Procedures

Step	Check Item	Result	Action
1	Does the paper being used meet product specifications?	NO	Instruct the user to use paper that meets product specifications.
2	Is the paper curled, waved, or damp?	YES	Change the paper. Instruct the user in how to store the paper.
3	Is the Transport Guide Plate dirty?	YES	Remove foreign matter and clean the guide plate.
4	Is the Transport Roller deformed or worn?	YES	Change the Transport Roller.
5	Does the Transport Motor operate properly?	NO	Check the wiring between the Main Board and Transport Motor and, if it is intact, change the motor.
6	Does the actuator of the Upper Exit Sensor operate properly?	NO	Check the position of the Upper Exit Sensor installation and check the actuator for deformation and contamination.
7	Is the Upper Exit Sensor output signal properly applied to the Main Board?	YES	Change the Main Board.
		NO	Check the wiring between the Main Board and Upper Exit Sensor and, if it is intact, change the sensor.

6.6.3.2 Malfunction detection and trouble shooting procedures

6.6.3.2.1 Malfunction Detection (Shift Tray only)

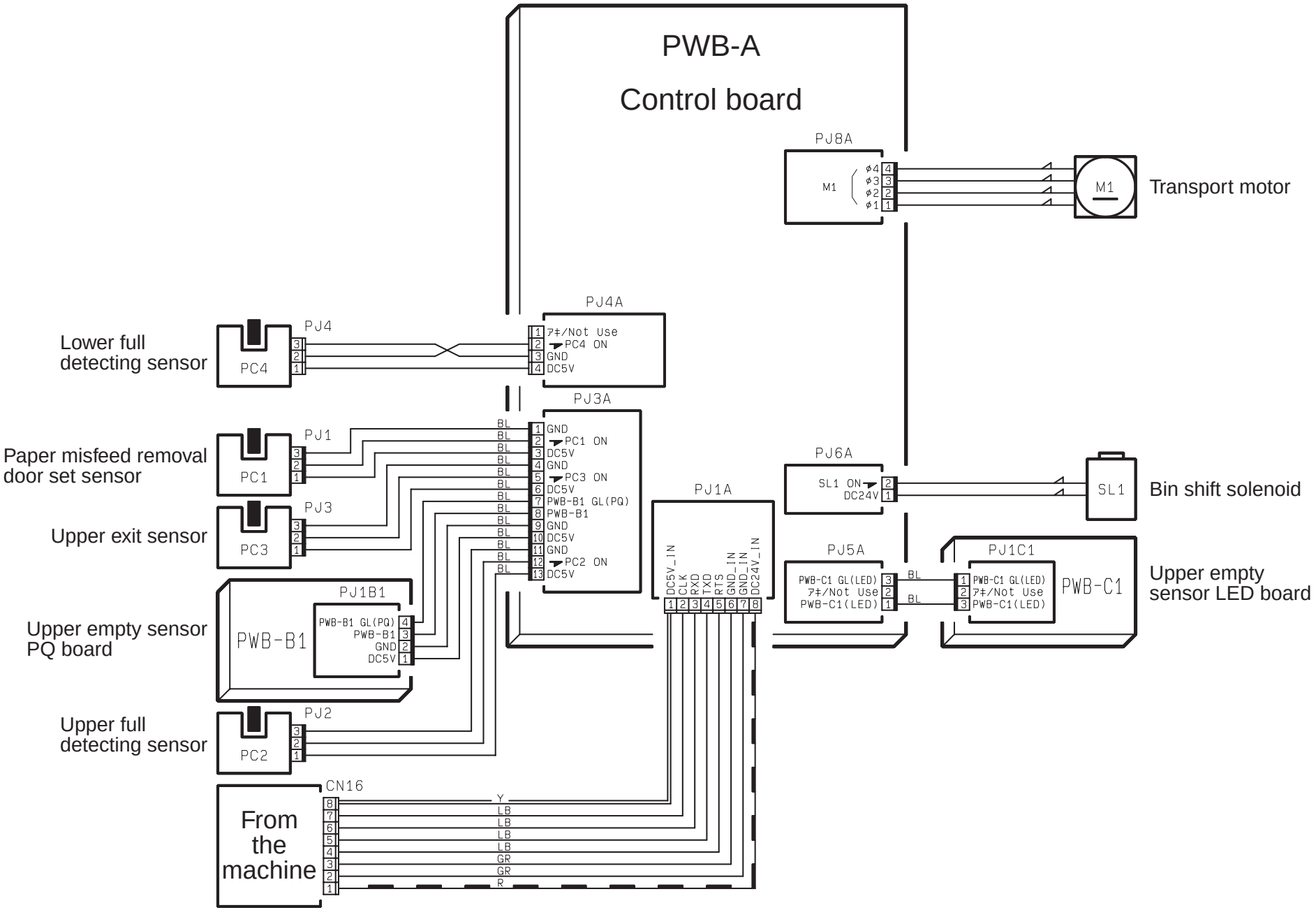
A malfunction is detected under the following condition, causing the corresponding malfunction code to be displayed on the machine control panel. (See “Service call error,” page 4-22.)

Malfunction Code	Malfunction Detail	Detection Timing
28	Shift Tray shift motion failure	(When moving from home to shift position) The Shift Home Sensor is blocked after a given period of time after the Shift Motor has been energized (at which timing the motor is deenergized). (When moving from shift to home position) The Shift Home Sensor is not blocked even after the lapse of a given period of time after the Shift Motor has been energized.

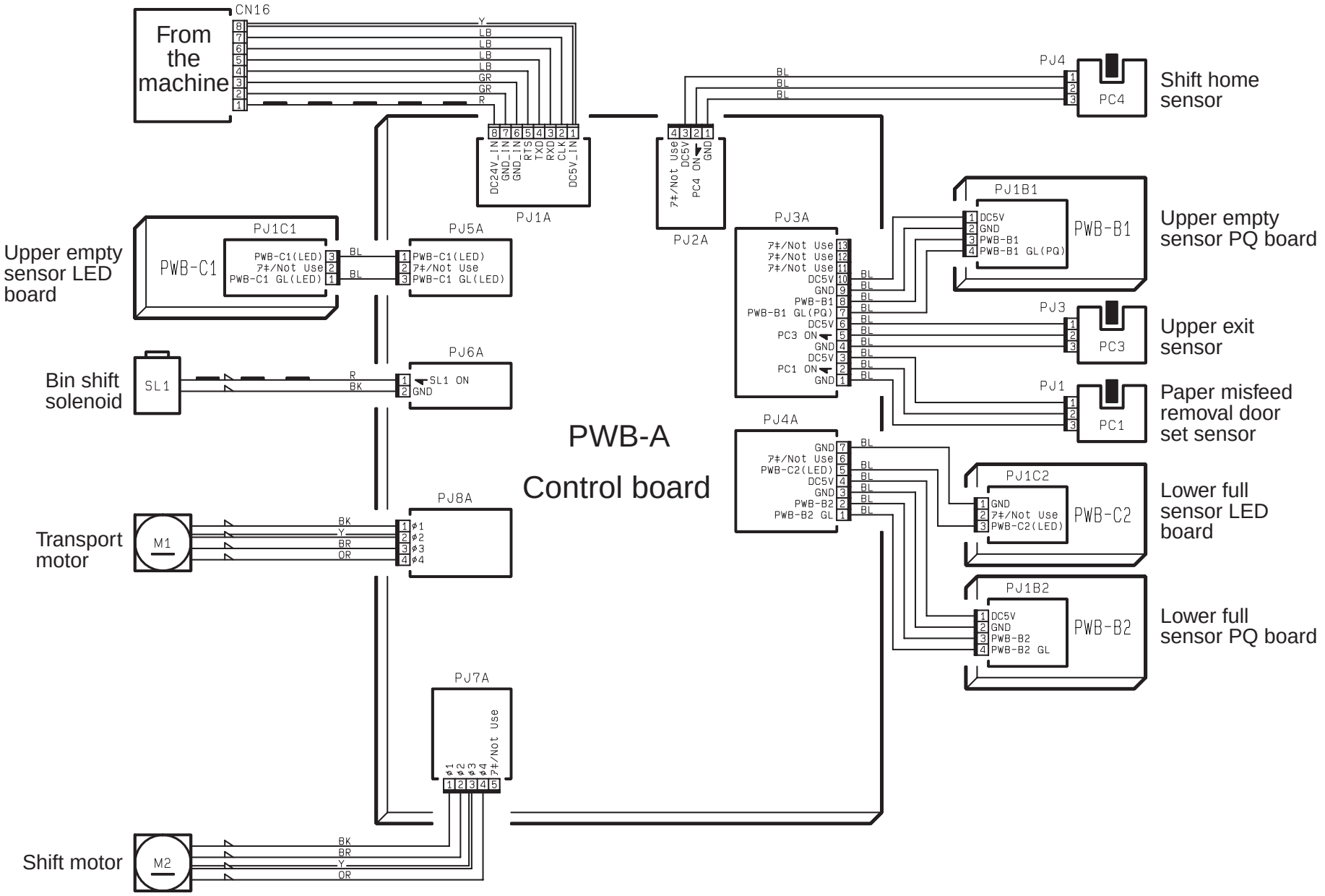
6.6.3.2.2 Malfunction Troubleshooting Procedures

Step	Check Item	Result	Action
1	Does the Shift Tray move in the initial operation?	YES	Check step 4.
2	Does the Shift Tray slide smoothly when the gear is turned manually with the Shift Motor removed?	NO	Check for contamination and improper installation.
3	Is an output signal being sent from the Main Board to Shift Motor?	YES	Check the wiring between the Main Board and Shift Motor and, if it is intact, change the motor.
		NO	Change the Main Board.
4	Are the Shift Home Sensor and its light blocking plate dirty?	YES	Remove foreign matter or clean.
5	Is the Shift Home Sensor output signal properly applied to the Main Board?	YES	Change the Main Board.
		NO	Check the wiring between the Main Board and Shift Home Sensor and, if it is intact, change the sensor.

<2-Bin Tray>


PWB-A
Control board
PJ8A
M1
φ4
φ3
φ2
φ1
M1
Transport motor
PJ4A
PJ4
Lower full detecting sensor
PC4
ｱ‡/Not Use
PC4 ON
GND
DC5V
PJ3A
PJ1
Paper misfeed removal door set sensor
PC1
PJ3
Upper exit sensor
PC3
GND
PC1 ON
DC5V
GND
PC3 ON
DC5V
PWB-B1 GL(PQ)
PWB-B1
GND
DC5V
GND
PC2 ON
DC5V
BL
PJ1A
DC5V_IN
CLK
RXD
TXD
RTS
GND_IN
GND_IN
DC24V_IN
PJ6A
SL1 ON
DC24V
SL1
Bin shift solenoid
PJ5A
PWB-C1 GL(LED)
ｱ‡/Not Use
PWB-C1(LED)
PJ1C1
PWB-C1
Upper empty sensor LED board
PJ1B1
PWB-B1
Upper empty sensor PQ board
PWB-B1 GL(PQ)
PWB-B1
GND
DC5V
PJ2
Upper full detecting sensor
PC2
CN16
From the machine
Y
LB
LB
LB
LB
GR
GR
R

<Shift Tray>


From the machine
CN16
PJ1A
PJ2A
PJ4
Shift home sensor
PC4
PJ1B1
PWB-B1
Upper empty sensor PQ board
PJ3
Upper exit sensor
PC3
PJ1
Paper misfeed removal door set sensor
PC1
PJ1C1
PWB-C1
Upper empty sensor LED board
PJ5A
PJ6A
SL1
Bin shift solenoid
PJ3A
PJ4A
PWB-A
Control board
PJ1C2
PWB-C2
Lower full sensor LED board
PJ1B2
PWB-B2
Lower full sensor PQ board
PJ8A
M1
Transport motor
PJ7A
M2
Shift motor

6.7 Duplex Unit

6.7 Duplex Unit 6-74
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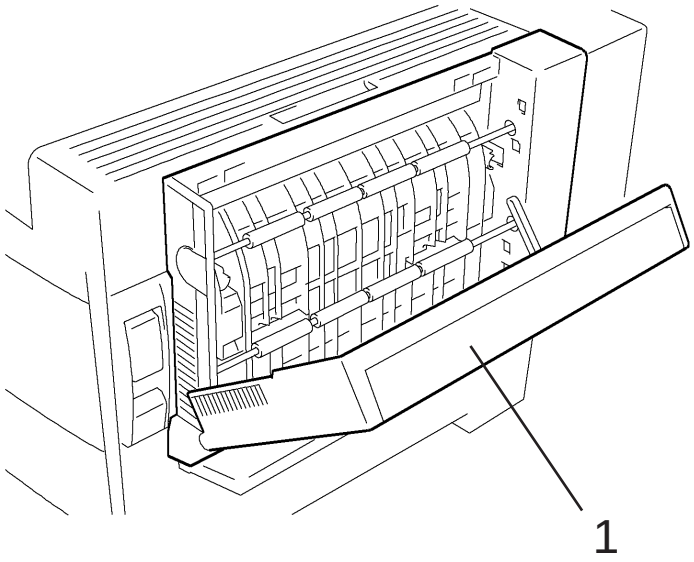
6.7.1 GENERAL, MECHANICAL/ELECTRICAL

6.7.1.1 Specifications

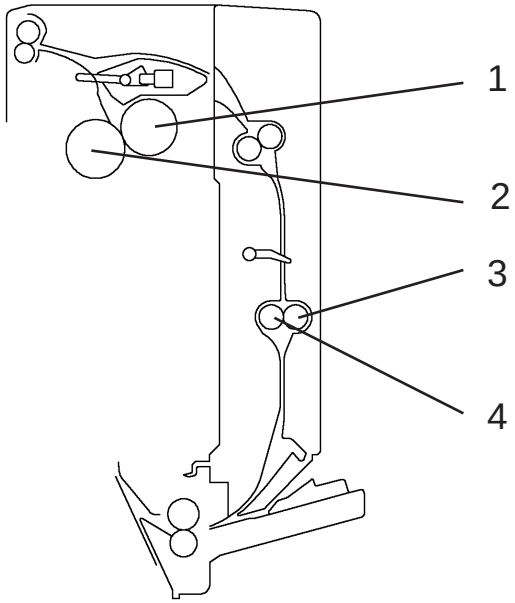
Type	:	Switchback and Circulating Duplex Unit
Installation	:	Mounted on the right side door of the machine
Type of Paper	:	Plain paper (60 to 90 g/m² or 16 to 24 lbs.), recycled paper (60 to 90 g/m² or 16 to 24 lbs.)
Paper Size	:	A5L/C to A3L or 5.5″ × 8.5″L/C to 11″ × 17″L (L: Lengthwise; C: Crosswise)
Registration	:	Center
Power Requirements	:	DC24V ±10%, DC5V ±10% (supplied from main unit)
Power Consumption	:	21W or less
Dimensions	:	55 (W) × 415 (D) × 255 (H) or 2.25″ (W) × 16.25″ (D) × 10″ (H)
Weight	:	1.8 kg or 4 lbs.
Environmental Requirements	:	Same as machine

6.7.1.2 Parts Identification



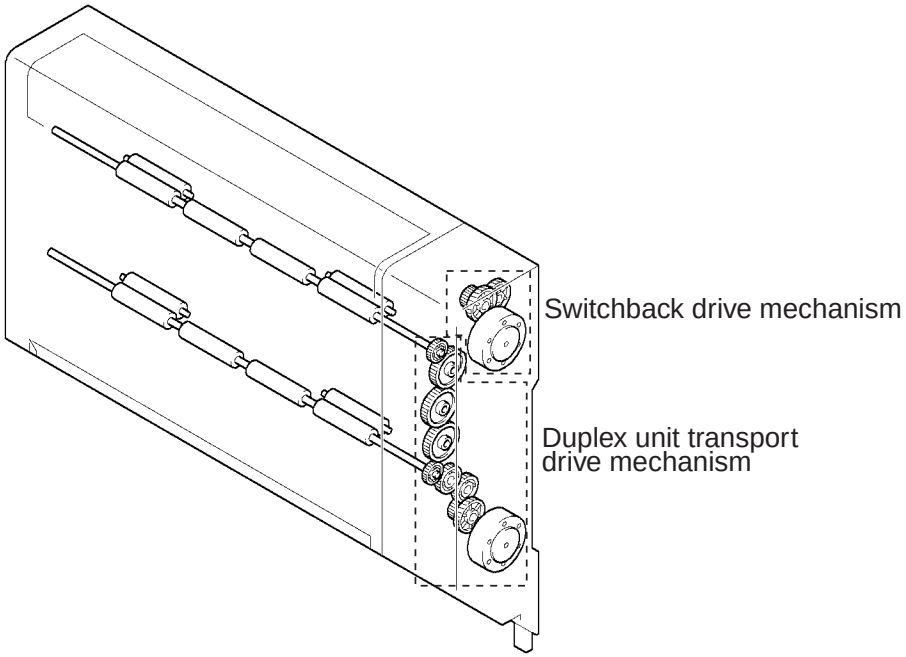
1. Duplex Unit Door

6.7.1.3 Cross-Sectional View

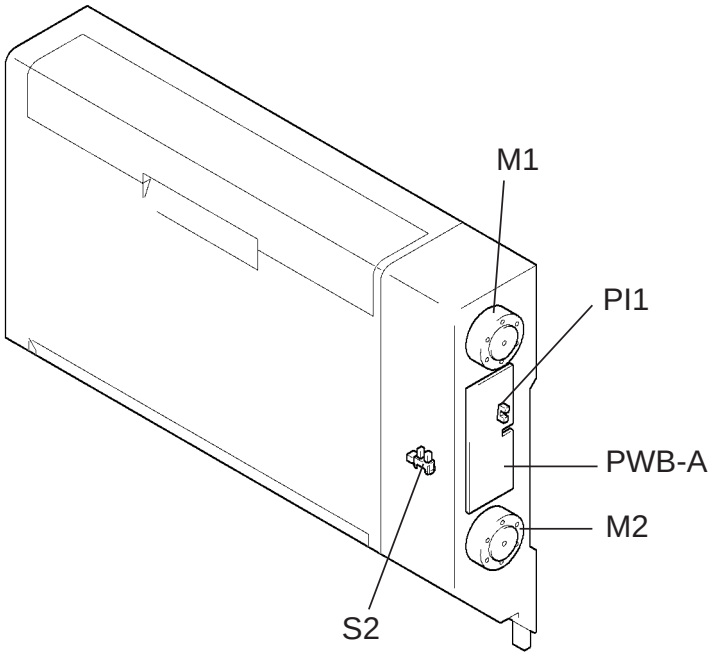


1. Duplex Unit Transport Roller 1
2. Duplex Unit Transport Roll 1
3. Duplex Unit Transport Roller 2
4. Duplex Unit Transport Roll 2

6.7.1.4 Drive System



6.7.1.5 Electrical Components Layout



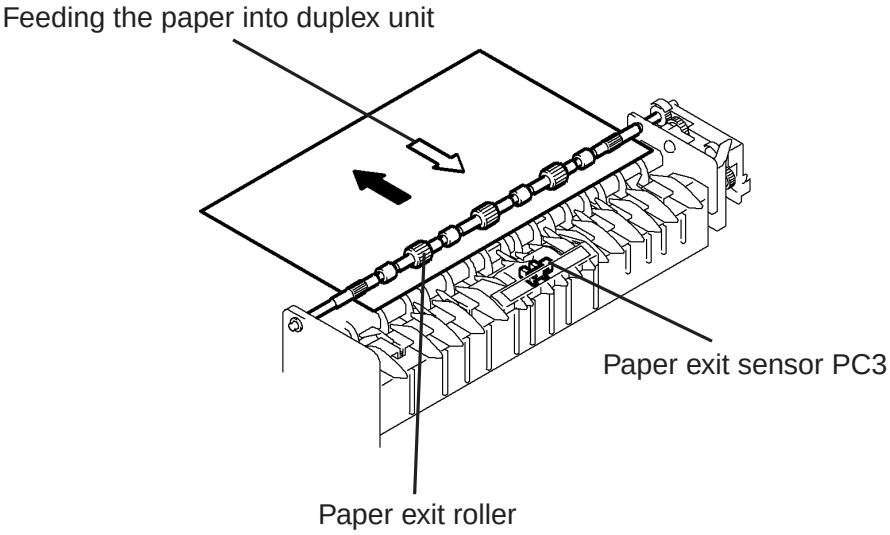
Symbol	Name	Symbol	Name
PWB-A	Duplex Main Board	S2	Duplex Unit Door Set Sensor
M1	Switchback Motor	PI1	Duplex Unit Transport Sensor (in PWB-A)
M2	Duplex Unit Transport Motor		

6.7.1.6 Mechanical Operations

6.7.1.6.1 Switchback Mechanism

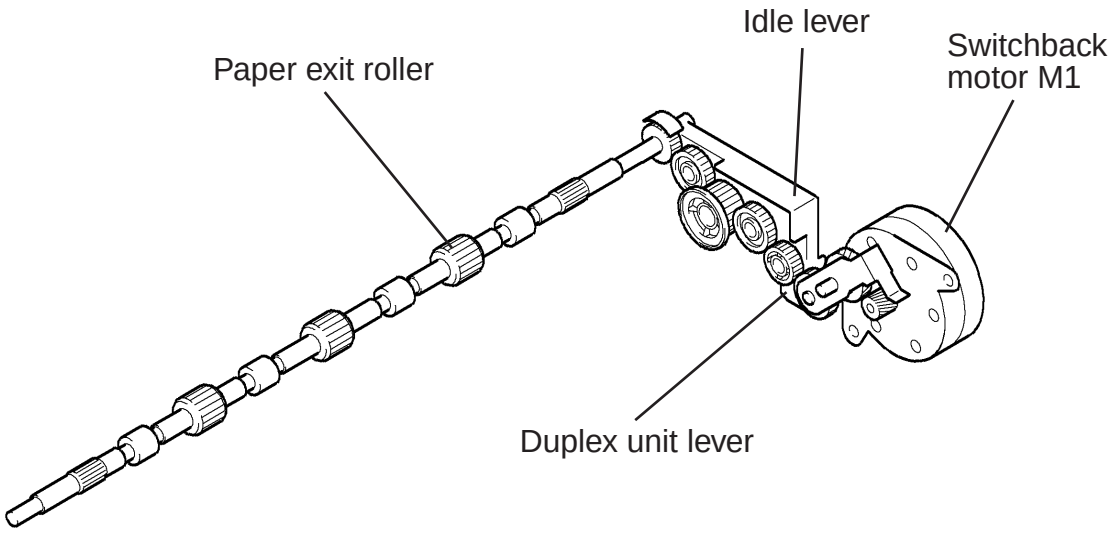
(1) Switchback Operation

The Paper Exit Roller reverses the direction of feeding the 1-sided copy into the Duplex Unit (switchback operation). This switchback operation by the Paper Exit Roller is accomplished by changing the direction of rotation of the Switchback Motor whose drive is transmitted via a gear train. When the motor is turned forward, the paper is fed out of the machine. When the motor is turned backward, the paper is fed into the Duplex Unit.



(2) Paper Exit Roller Drive Coupling Mechanism

When the Duplex Unit is mounted, the tip of the Duplex Unit Lever raises the Idle Lever to disconnect the drive from the machine (Fusing Roller) and, instead, provides the Paper Exit Roller with the drive from the Switchback Motor.



(3) Switchback Motor Control

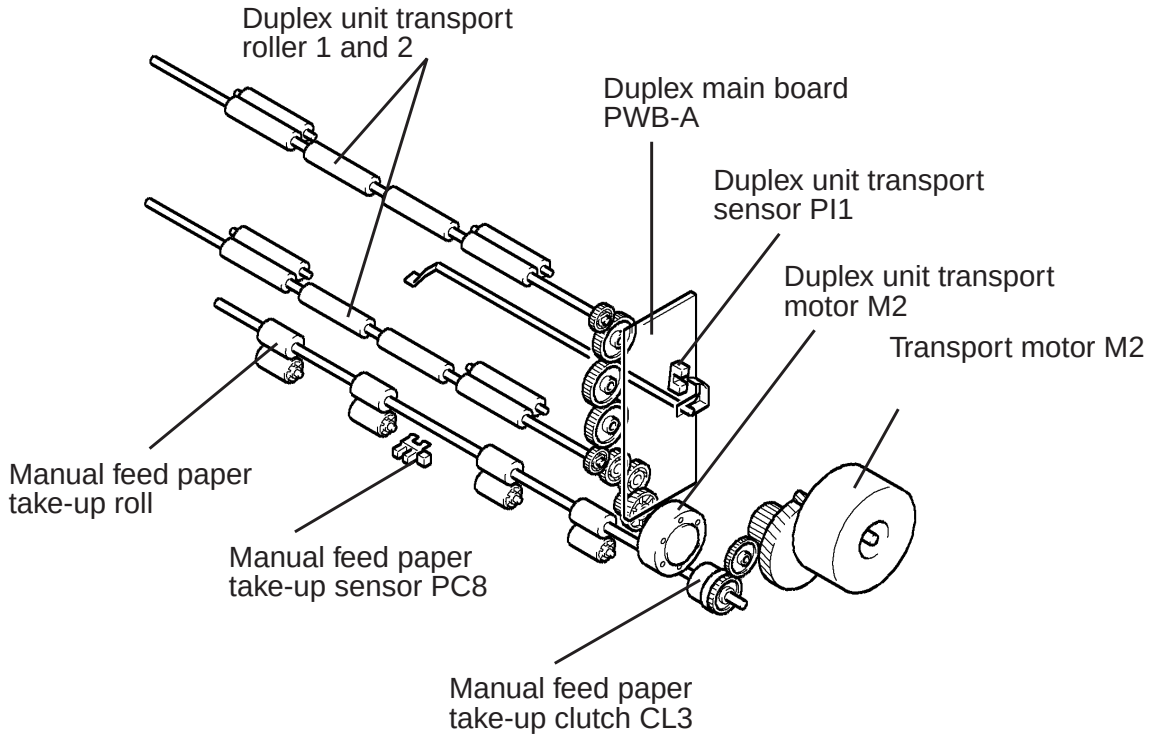
The Switchback Motor is a two-phase stepping motor. Its direction of rotation and speed are controlled by applying pulse signals output from pins 1 to 4 of PJ3A to the motor.

6.7.1.6.2 Transport and Duplex Paper Take-Up Mechanism

(1) Transport and Duplex Paper Take-Up Operation

The paper fed into the Duplex Unit is transported through, and eventually fed out of, the Duplex Unit before being fed to the paper take-up mechanism of the machine.

The transport and Duplex paper take-up operations are performed by two pairs of Duplex Unit Transport Rollers/Rolls and the Manual Feed Paper Take-Up Roll of the machine. The use of the latter contributes to smaller floor space requirements. The drive for these operations comes from the Duplex Unit Transport Motor and Manual Feed Paper Take-Up Clutch.


Duplex unit transport roller 1 and 2
Duplex main board PWB-A
Duplex unit transport sensor PI1
Duplex unit transport motor M2
Transport motor M2
Manual feed paper take-up roll
Manual feed paper take-up sensor PC8
Manual feed paper take-up clutch CL3

(2) Duplex Unit Transport Motor Control

The Duplex Unit Transport Motor is a two-phase stepping motor. Its speed is controlled by applying pulse signals output from pins 1 to 4 of PJ2A to the motor.

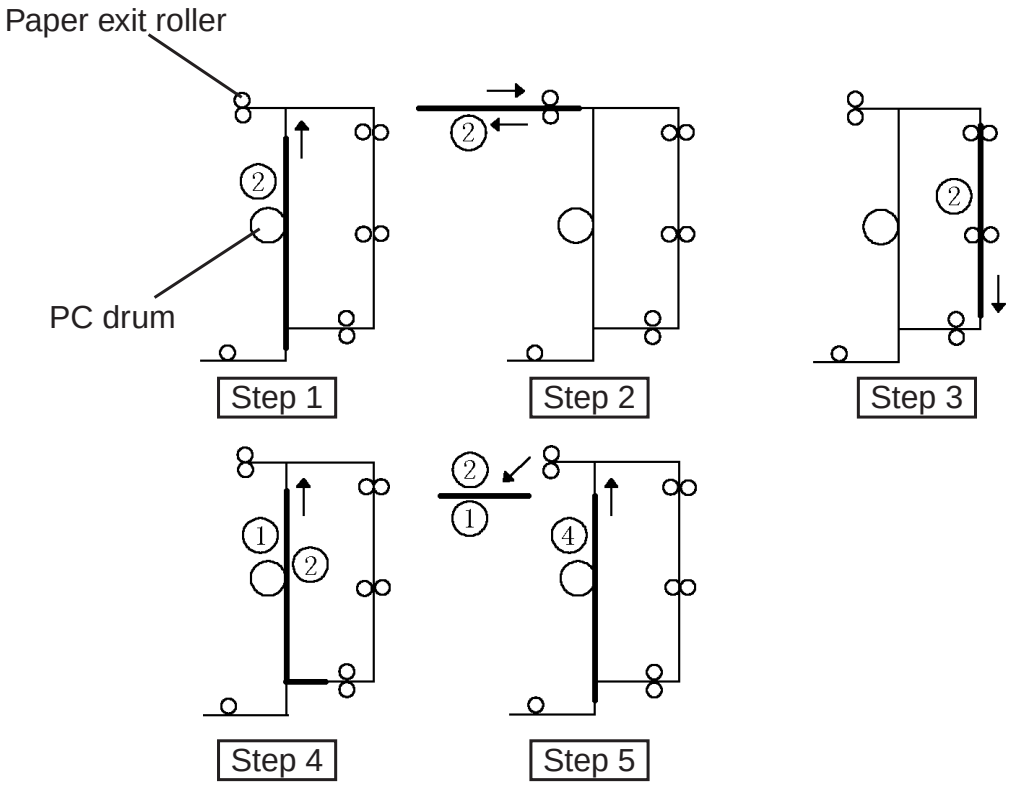
6.7.1.6.3 2-Sided Copying Schemes

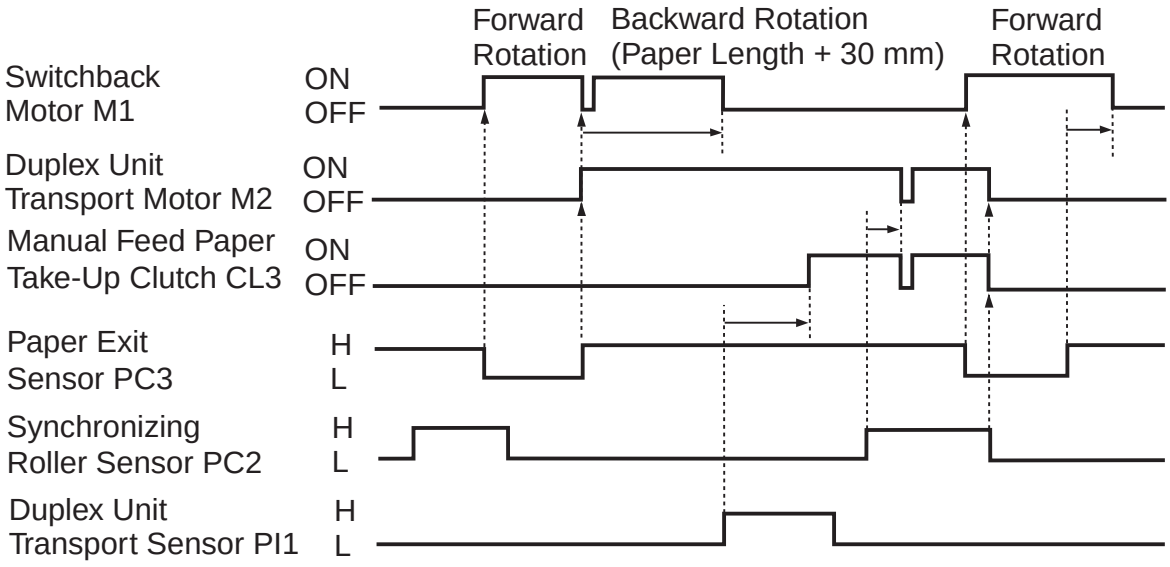
The following two 2-sided copying schemes are available.
Note, however, that the paper size (in the feeding direction) that is applicable to double-sheet 2-sided copying is Letter crosswise (215.9 mm) or smaller.

2-Sided Copying Schemes
- Single-sheet 2-sided copying
- Double-sheet 2-sided copying

(1) Operation of Single-Sheet 2-Sided Copying

1. A sheet of paper is taken up and fed in and the image of the second page is printed.
2. Just before the 1-sided copy moves past the Paper Exit Roller, the direction of rotation of the Paper Exit Roller is reversed and the 1-sided copy is transported towards the Duplex Unit.
3. The 1-sided copy being transported through the Duplex Unit is fed into the machine with-out being stopped.
4. The image of the first page is printed on the 1-sided copy fed out of the Duplex Unit and the resultant 2-sided copy is fed towards the paper exit section of the machine.
5. As the 2-sided copy is being fed out of the machine, the next sheet of paper is taken up and fed in for the printing of the image of the fourth page.
   (Steps 2 through 5 are then repeated.)

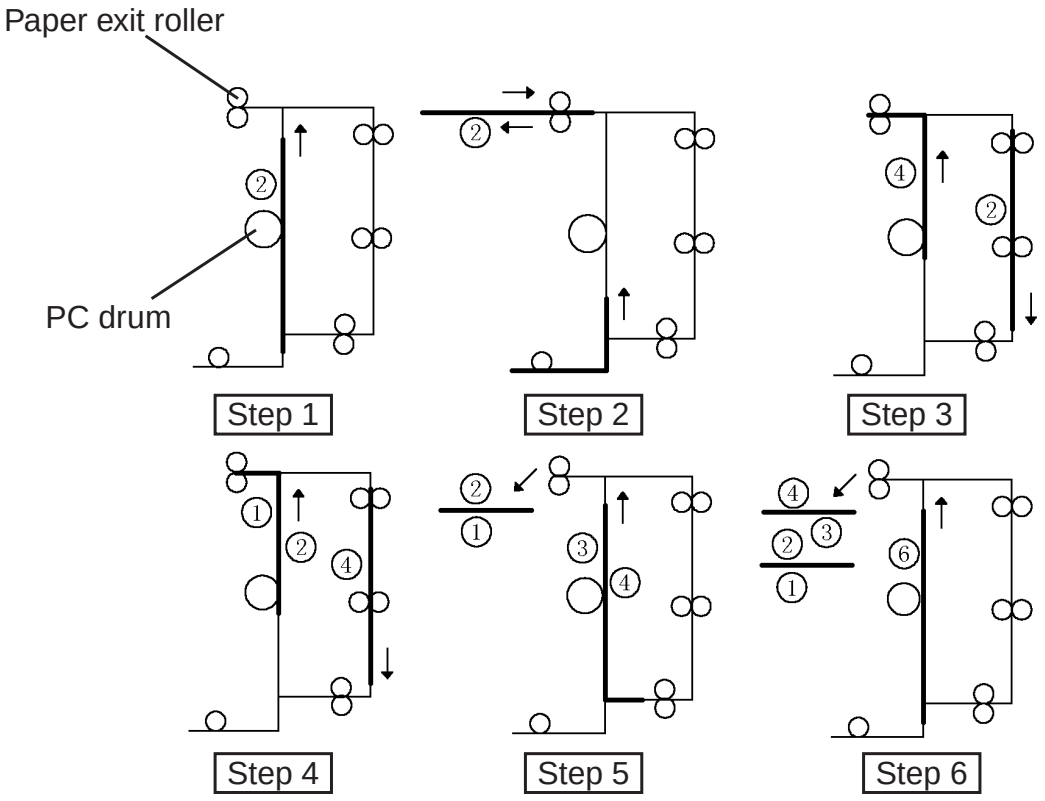




* When the paper moves a distance of about 20 mm after it has unblocked (H) the Synchronizing Roller Sensor, both Duplex Unit Transport Motor M2 and Manual Feed Paper Take-Up Clutch CL3 are temporarily deenergized. (The period of time during which M2 and CL3 are kept deenergized varies depending on the Image Synchronizing signal out-put timing.

(2) Operation of Double-Sheet 2-Sided Copying

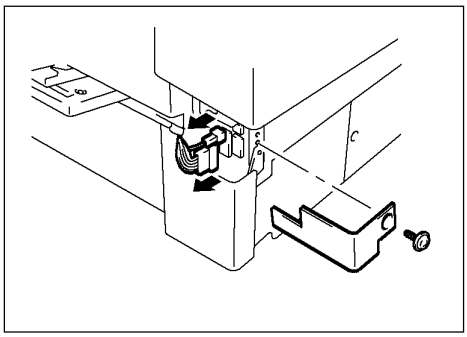
1. The first sheet of paper is taken up and fed in and the image of the second page is printed.
2. Just before the 1-sided copy moves past the Paper Exit Roller, the direction of rotation of the Paper Exit Roller is reversed and the 1-sided copy is transported towards the Duplex Unit. At the same time, the second sheet of paper is taken up and fed in.
3. At the same time when the image of the fourth page is printed on the second sheet of paper, the first 1-sided copy is transported through the Duplex Unit. Because of the Duplex paper take-up timing involved, the first 1-sided copy is temporarily stopped at a point 20 mm before the Manual Feed Take-Up Roll; but it is soon fed out of the Duplex Unit.
4. The image of the first page is printed on the first 1-sided copy fed out of the Duplex Unit. At the same time, the second 1-sided copy is reversed at the paper exit section of the machine and transported towards the Duplex Unit. It is then fed out of the Duplex Unit without being stopped.
5. The image of the third page is printed on the second 1-sided copy.
6. As the second 2-sided copy is fed towards the paper exit section of the machine and as it is being fed out of the machine, the third sheet of paper is taken up and fed in for the printing of the image of the sixth page.
   (Steps 2 through 6 are then repeated.)



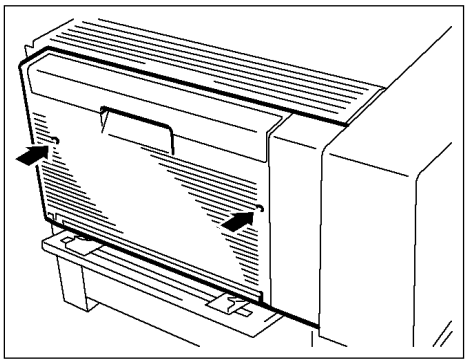
6.7.2 DIS/REASSEMBLY, ADJUSTMENT

6.7.2.1 Disassembly

6.7.2.1.1 Removal of the Duplex Unit

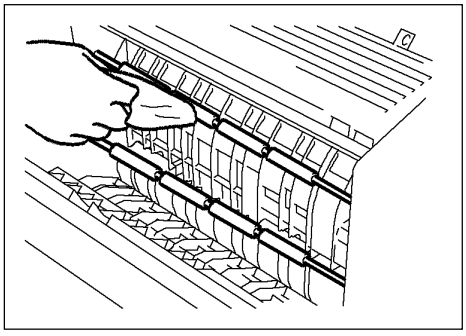


1. Remove the wiring cover (one screw).
2. Unplug the connectors (two).



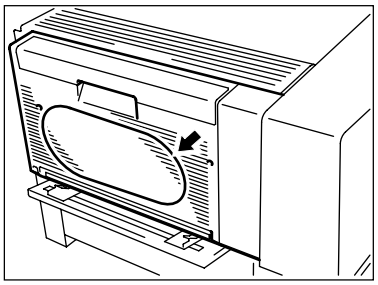
3. Remove the Duplex Unit (two screws).

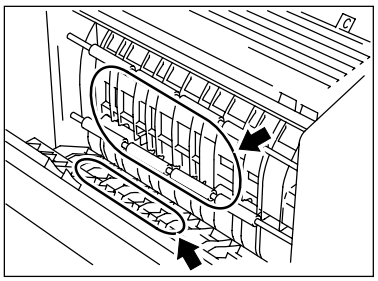
6.7.2.1.2 Cleaning of Duplex Unit Transport Roller 1 and 2 and Duplex Unit Transport Roll 1 and 2



Wipe the surfaces of Duplex Unit Transport Roller 1 and 2 and Duplex Unit Transport Roll 1 and 2 clean with a soft cloth dampened with alcohol.

6.7.2.1.3 Cleaning of Exhaust Vent area



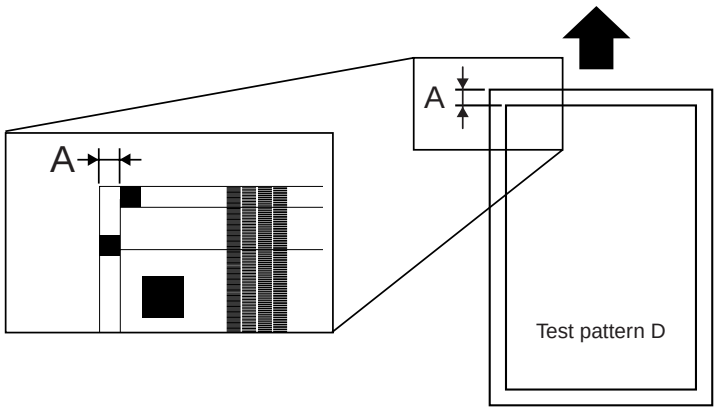


1. Wipe the surface of the Exhaust Vent areas clean with a soft cloth dampened with alcohol.

6.7.2.2 ADJUSTMENT

6.7.2.2.1 Adjustment of Printer Registration (side)

Requirement:
First perform the adjustments listed below:
1. Printer registration (top) and Printer registration (side) for all paper sources. (See page 5-81 and 5-82.)
2. ADF registration (top and side) and FBS registration (top and side). (See page 5-83 and 5-84.)



Dimension A on the 2-sided copy should be adjusted to meet specifications.

Specification	Adjustment Tool	Setting Range
10 ± 2.0 (mm)	Machine parameter K:7 Machine parameter L:7	– 12.8 to 12.7 (mm) (0.1 mm step)

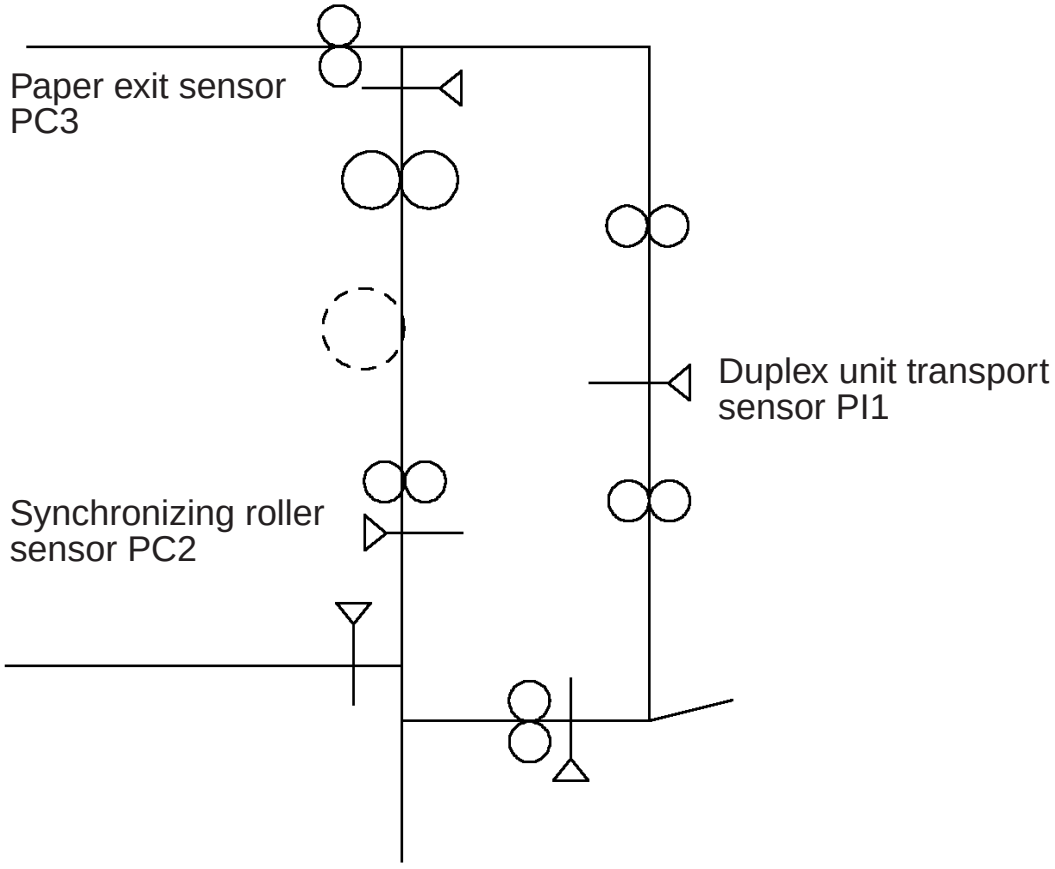
Adjustment procedure

1. Load the A3-sized paper to the cassette.
2. Produce a test pattern D with the A3-sized paper and make a 2-sided copy of it.
   (To produce a test pattern D, press **MENU, ✻, 9, Test Pattern Print**. For detail, see page 3-123.)
3. Check to see if width A meets the specifications.
   If width A falls outside the specified range, perform following steps to make the adjustment.
4. Entry the Machine Parameter mode. (Press **MENU, ✻, 0**. For detail, see page 3-2.)
5. Adjust the setting of Machine Parameter K:7 to meet the specification.
   If the width A is shorter than specification, increase value.
   If the width A is longer than specification, decrease value.

6.7.3 MISFEED DETECTION

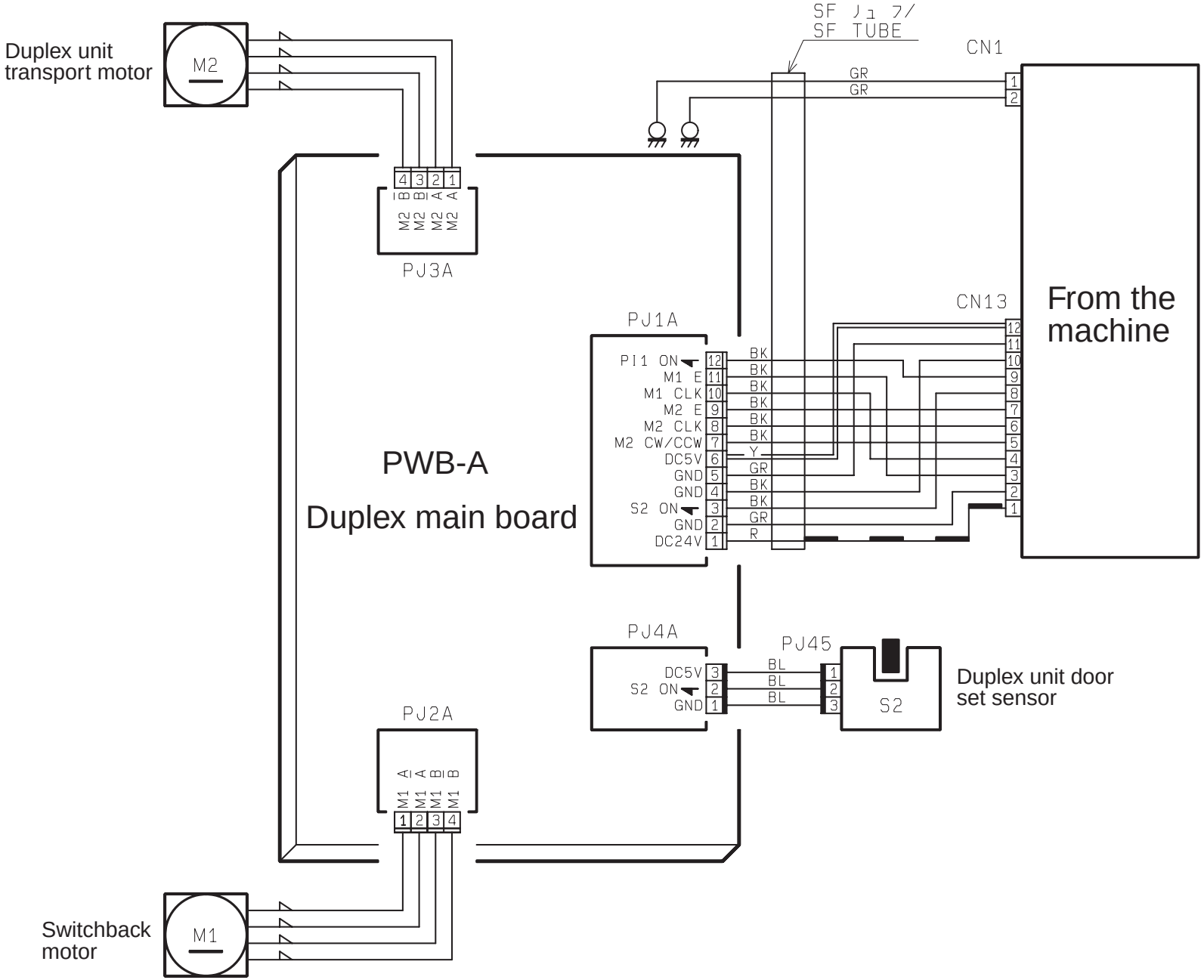
6.7.3.1 Misfeed Detection

6.7.3.1.1 Misfeed Detecting Sensors Layout



6.7.3.1.2 Types of Misfeed and Misfeed Detection Timings

Type	Detection Timing
Paper left	The output from Duplex Unit Transport Sensor PI1 is blocked (L) when the machine Power Switch is turned ON or a misfeed is reset.
Paper take-up failure	1. Synchronizing Roller Sensor PC2 is unblocked (H) at a shorter than normal tim7e after a Duplex paper take-up sequence has started. 2. Synchronizing Roller Sensor PC2 is not unblocked (H) within a given period of time after a Duplex paper take-up sequence has started.
Paper leading edge detection during transport through Duplex Unit	Duplex Unit Transport Sensor PI1 is not blocked (H) within a given period of time after Paper Exit Sensor PC3 has been unblocked (H).


Duplex unit transport motor
M2
SF ジュニア
SF TUBE
CN1
GR
GR
PJ3A
M2 B
M2 B
M2 A
M2 A
CN13
From the machine
PJ1A
PWB-A
Duplex main board
PI1 ON
M1 E
M1 CLK
M2 E
M2 CLK
M2 CW/CCW
DC5V
GND
GND
S2 ON
GND
DC24V
BK
BK
BK
BK
BK
BK
Y
GR
BK
BK
GR
R
PJ4A
PJ45
DC5V
S2 ON
GND
BL
BL
BL
S2
Duplex unit door set sensor
PJ2A
M1 A
M1 A
M1 B
M1 B
Switchback motor
M1

6.8 Second phone line

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6.8.1 Attaching the second phone line

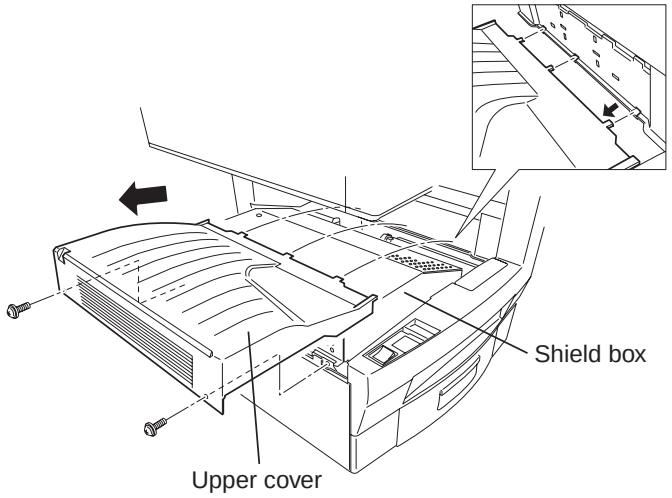
6.8.1.1 Unpacking

Included in the second phone line kit's carton box:

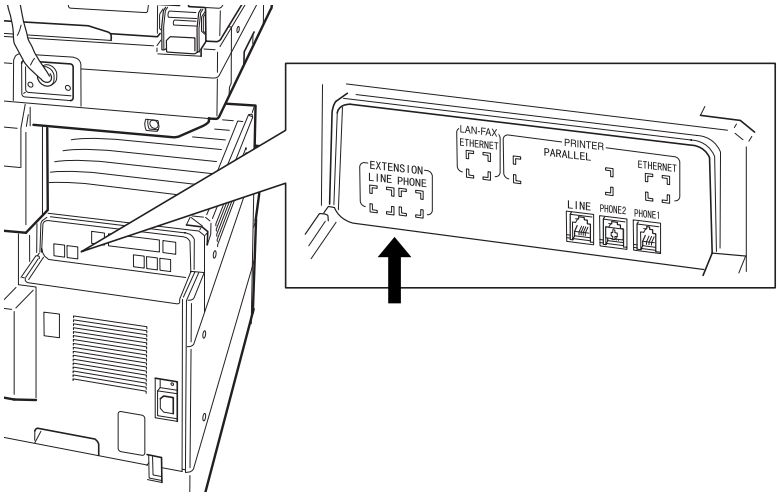
- ❑ NCU PCB 1
- ❑ Modem PCB 1
- ❑ Connection cable (60P: with ferrite core) 1
- ❑ Connection harness 1 (13P: orange)..... 1
- ❑ Connection harness 2 (14P: yellow)..... 1
- ❑ Spacers (long) 2
- ❑ Spacers (short)..... 2
- ❑ PCB brackets..... 2
- ❑ Cable clamp..... 1
- ❑ Insulator..... 1
- ❑ Screws..... 7
- ❑ Operating instructions (includes setting-up instructions).... 1

6.8.1.2 Installing the Second phone line module

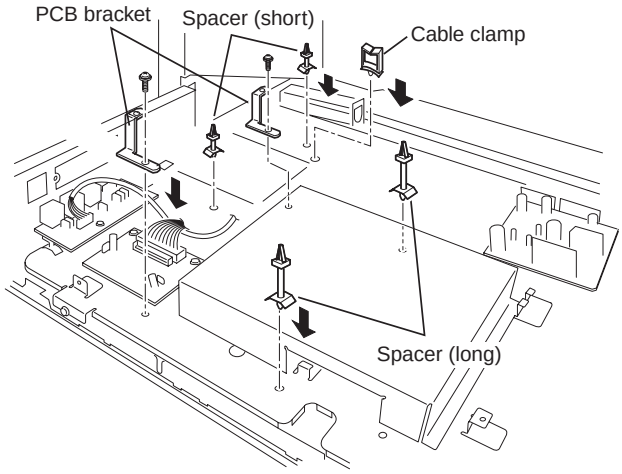
1. Turn the machine off and unplug the power cord and telephone line cord.
2. Remove the rear cover (upper).
3. Remove the upper cover, and then remove the shield box.



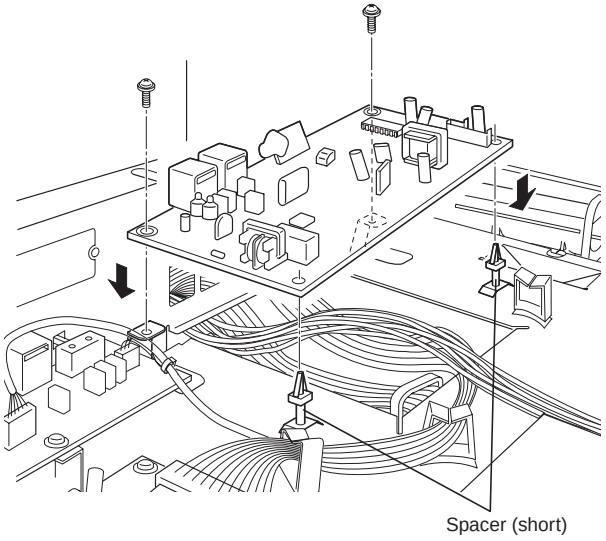
4. Use cutting pliers to gently punch out the perforated panel of the "EXTENSION LINE" and "EXTENSION PHONE" on the panel sheet.



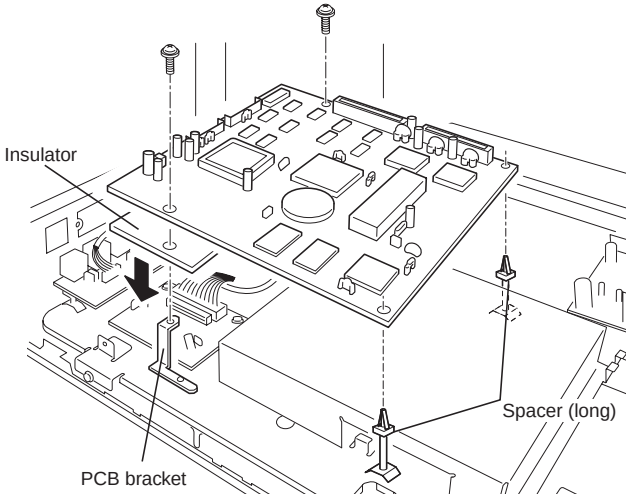
5. Attach two long spacers and two short spacers to the places marked " 2 " on the metal plate.
6. Attach the cable clamp to the place marked "△".
7. Attach two PCB brackets using screws.



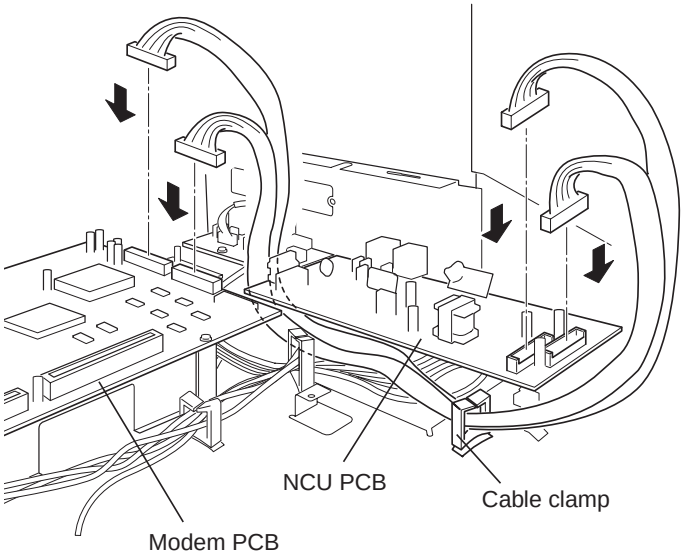
8 Attach the NCU PCB of the second phone line kit using two screws and two spacers.



9 Attach the Modem PCB of the second phone line kit and Insulator using two screws and two spacers.

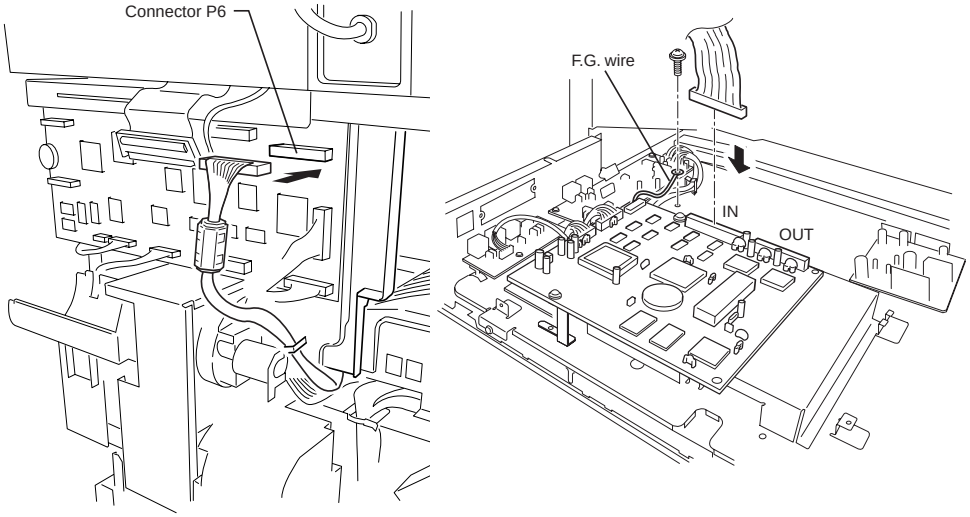


10 Connect P30A and P3A, P30B and P3B using the harnesses. Pass the harnesses through the clamp attached in step 6, and let them be under the NCU PCB.



11 Connect P6 on the Main PCB of the main unit and IN on the Modem PCB using the harness as shown:

12 Attach the FG line on the Modem PCB to the place marked “FG” on the metal plate.



13 Reinstall the covers.

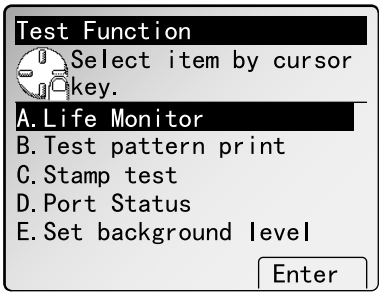
14. Connect second phone line cable into the EXTENSION LINE.

15. Register the line settings. Refer to the “EasyStart” on the operating instructions.

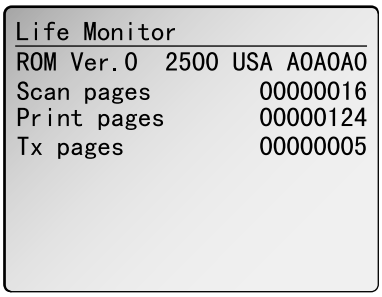
6.8.2 Display of the Software Version

You can see the current software version using the life monitor.

1. From standby mode, press **MENU, *, 9.**
2. Select **"A. Life Monitor"**.

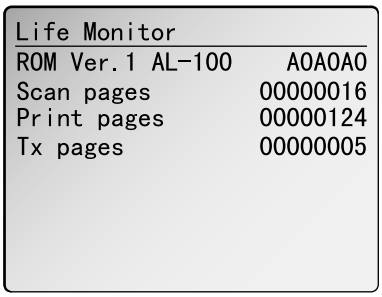


3. Press **[Enter].** The software version will be shown on the top line of the LCD.



4. Press optional board number using the numeric keypad as shown in the following table.

Software version	Numeric keypad
• Flash ROM on Main control PCB	0
• Built-in CPU ROM	* (asterisk)
• The first optional kit	1
• The second optional kit	2
• The third optional kit	3



5. Press **RESET** to exit and return to the standby mode.

6.8.3 Adjustment

Important: These memory switches and unique switches only for AL-250 are shown in this section.

6.8.3.1 Memory Switches Adjustment

If necessary, you must set the following switches.

1. From Fax standby mode, press **MENU, *, 1.**

2. Select the desired memory switch by pressing a one-touch key plus a number on the keypad.

3. Press **[Enter]**.

Memory Switch B:0 – Transmission

Switch	Initial Setting	Adjust	Usage/Comments
7	1	Refer to Section 3 of this FEM	
6	0	Refer to Section 3 of this FEM	
5	0	Refer to Section 3 of this FEM	
4	0	Refer to Section 3 of this FEM	
3	1	Maximum transmit speed, kbps	
2	1		
1	0		
0	1		

2.4	4.8	7.2	9.6	12	14.4	16.8	19.2	21.6	24	26.4	28.8	31.2	33.6
0	0	0	0	0	0	0	0	1	1	1	1	1	1
0	0	0	0	1	1	1	1	0	0	0	0	1	1
0	0	1	1	0	0	1	1	0	0	1	1	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1

Note: This setting effect for both phone line 1 and 2.

Memory Switch C:0 – Reception

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Refer to Section 3 of this FEM	
6	0	Refer to Section 3 of this FEM	
5	0	Factory use only	
4	0	Factory use only	
3	1	Receive speed (kbps) Maximum receive speed may be slowed to compensate for poor phone lines.	
2	1		
1	0		
0	1		

2.4	4.8	7.2	9.6	12	14.4	16.8	19.2	21.6	24	26.4	28.8	31.2	33.6
0	0	0	0	0	0	0	0	1	1	1	1	1	1
0	0	0	0	1	1	1	1	0	0	0	0	1	1
0	0	1	1	0	0	1	1	0	0	1	1	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1

Note: This setting effect for both phone line 1 and 2.

6.8.3.2 Unique Switches Adjustment

Setting the Unique Switches

If necessary, you must set the following switches.

1. From Fax standby mode, press **MENU, *, 4.**

2. Select the desired memory switch by pressing a one-touch key plus a number on the keypad.

3. Press **[Enter]**.

Unique Switch d:0 – Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	1	3429 baud symbol rate when communicating at V.34 0: No 1: Yes	If the error frame often occurs because of the symbol rate is too high, setting this switch to “1” mask that symbol rate and keep down the occurrence of error frame.
4	1	3200 baud symbol rate when communicating at V.34 0: No 1: Yes	
3	1	3000 baud symbol rate when communicating at V.34 0: No 1: Yes	
2	1	2800 baud symbol rate when communicating at V.34 0: No 1: Yes	
1	0	Factory use only	
0	1	2400 baud symbol rate when communicating at V.34 0: No 1: Yes	If the error frame often occurs because of the symbol rate is too high, setting this switch to “1” mask that symbol rate and keep down the occurrence of error frame.

Unique Switch d:1 – Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Forced 2400 symbol rate when probing SNR is adverse	SNR means that Signal Noise Ratio. If the SNR is less than the threshold you set, the data pump overrides the bandwidth evaluation algorithm and forced the symbol rate to 2400 baud.
6	0		
5	0		
4	0		
3	1		
2	1		
1	1		
0	1		

Unique Switch d:2 – Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	1	Factory use only	
3	0	Factory use only	
2	1	ANSam output time 0: 3 sec 1: 4 sec	The time limit to output the ANSam (A sinwave signal at 2100 Hz amplitude-modulated). Sets to “1” when the V.8 handshake is hard to achieve.
1	0	Factory use only	
0	1	Factory use only	

Unique Switch d:7 – Modem

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Factory use only	
6	0	Factory use only	
5	0	Factory use only	
4	0	The delay before post-message is transmitted	If retraining occurs due to the low reception signal level and few delay of the telephone line, it may overlap the second post-message. In this case, increase the delay before the post-message is transmitted. 0 ms 100 ms 200 ms 300 ms Switch 4: 0 0 1 1 Switch 3: 0 1 0 1
3	0		
2	0	Factory use only	
1	0	Factory use only	
0	0	Factory use only	

Unique Switch i:4 – Miscellaneous

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Time to change the display between the first and second phone lines. (sec)	Set the time to change the display between the first and second phone lines during the second phone line is communicating. When set to “0”, show only the line during communication. Switch 76543210 Time 11111111 2550 sec 11111110 2540 sec 11111101 2530 sec : 00000101 50 sec : 00000011 30 sec 00000010 20 sec 00000001 10 sec
6	0		
5	0		
4	0		
3	0		
2	1		
1	0		
0	1		

6.9 RS-232C Interface

6.9.1 Attaching the RS-232C Interface

6.9.1.1 Unpacking

Included in the RS-232C Interface kit's carton box:

- ❑ RS-232C Interface board.....1
- ❑ Ferrite core 1
- ❑ Screw.....2
- ❑ Operating instructions (includes setting-up instructions)....1
- ❑ Software disk.....1
- ❑ Software operating instructions 1

Be sure to save the module and packing materials for reshipment.

To connect between the fax machine and the computer, you need an extra RS-232C interface cable (see the below).

6.9.1.2 RS-232C interface cable

The RS-232C interface port on the newly installed RS-232C interface has a *DB-25* (standard 25-pin serial) *female receptacle* which accepts a *male DB-25 cable plug*. The computer's port may have either a DB-25 or *DB-9* (9-pin) receptacle. Please consult the interface's *pin assignment* on the below.

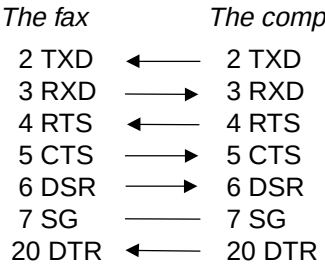
Note: Please see the computer's operating instructions about the serial interface port of the computer.

Pin assignment

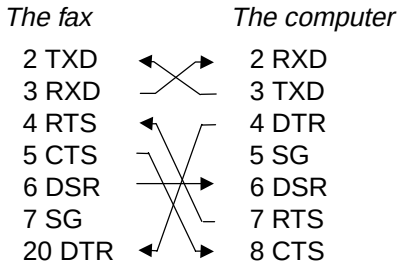
Pin No.	Signal code	Signal name	Contents
2	TXD	Transmitted data	Data signal sent from computer to the fax.
3	RXD	Received data	The data sent to computer by the fax.
4	RTS	Request to send	Signal for request to send data.
5	CTS	Clear to send	Data Enable signal for data transmission from the fax to the computer.
6	DSR	DCE ready	Turning on always.
7	SG	Signal ground	Ground for signal.
20	DTR	DTE ready	Data Terminal Enable — ready to communicate

Signal direction

25-pin type

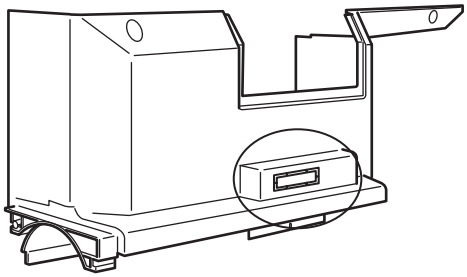


9-pin type

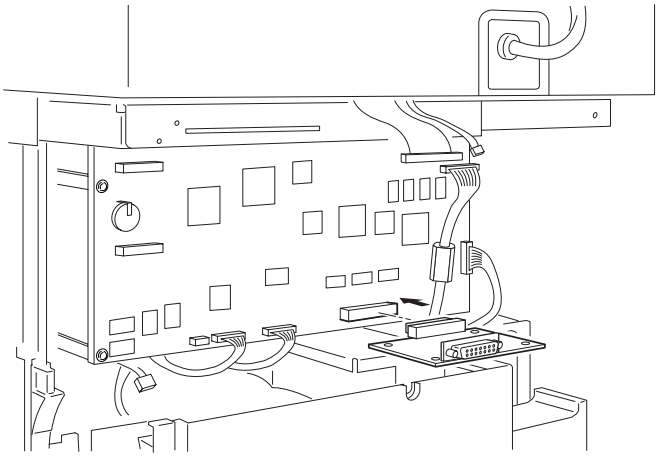


6.9.1.3 Attaching the RS-232C Interface

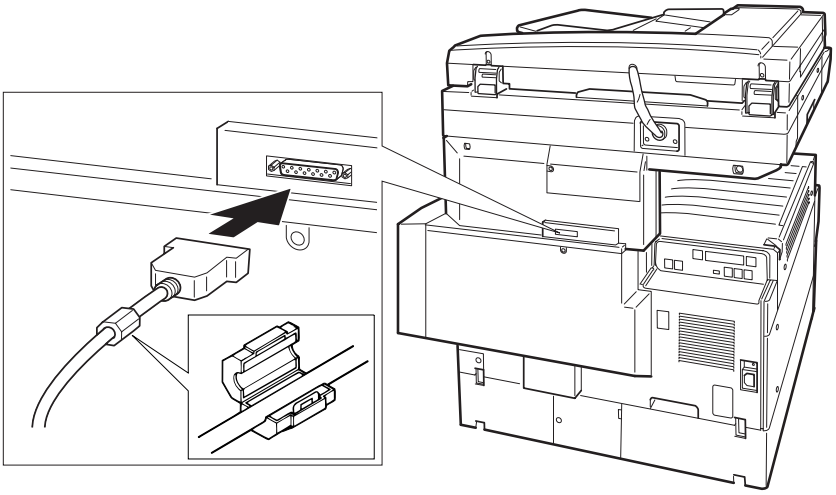
1. Turn the machine off and unplug the power cord and phone line cord.
2. Remove the rear cover (upper).
3. Use cutting pliers to gently punch out the rectangular connector space located on the rear cover.



4. Connect the RS-232C Interface board into the P4 connector on the main control PCB until the connector is firmly seated.



5. Re-attach the rear cover.
6. Attach the ferrite core to the RS-232C cable.
7. Connect one end of the RS-232C interface cable to the RS-232C interface port on the machine.



8. Connect the other end of the RS-232C cable to your computer's RS-232C port.
9. Plug the power cord and turn the machine on.

6.9.2 RS-232C Test

This mode is for return back test of the RS-232C port.
Please refer to the Section 3 for the procedure.

9.6.3 Adjustment

Note: The unique switches only for RS-232C interface are shown in this section.

6.9.3.1 Unique Switch Adjustment

If necessary, you must set the following switches.

1. From standby, press **MENU, *, 4.**

2. Select the desired unique switch by pressing a one-touch key plus a number on the keypad.

3. Press **[Enter]**.

Unique Switch j:4 – RS-232C

Switch	Initial Setting	Adjust	Usage/Comments
7	0	Adjusts CI counter	If the remote fax machine disconnects the phone line before the PC responses the CI signal, the fax regards that the PC is off and then it will receive from the next call. In this case, increase the CI counter to be more than the number of rings the PC receives. Switch 3210 CI counter <u>0000 0 time</u> ← Initial setting 0001 1 time 0010 2 times : 0101 5 times : 1110 14 times 1111 15 times To reset this status, first initialize the PC's fax software and then the fax machine. To reset the PC's fax software: See operating instructions of PC's fax software. To reset the fax machine: 1. Press **MENU, Q, [Enter].** 2. Select "**Reset**" 3. Press **[Enter]**.
6	0		
5	0		
4	0		
3	0	Factory use only	
2	0	Factory use only	
1	0	Fax reception while scanning or printing through the RS-232C 0: No 1: Yes	Determines if reject the fax reception or receiving it instead of the PC, while the PC scans or prints through the RS-232C.
0	0	Factory use only	